

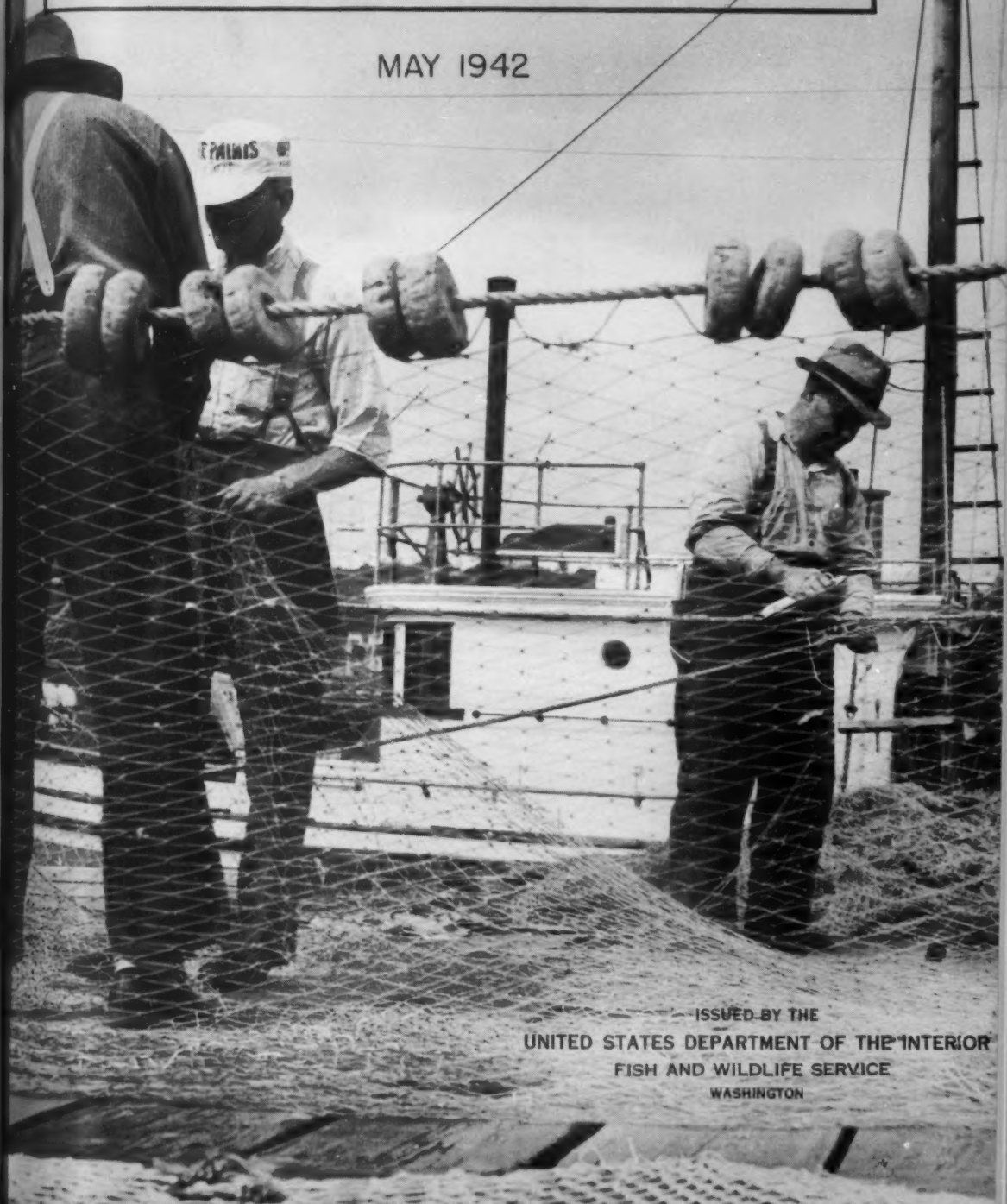
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FISHERY MARKET NEWS

MAY 1942



ISSUED BY THE
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UNITED STATES
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FISHERY MARKET NEWS

A REVIEW OF CONDITIONS AND TRENDS OF THE COMMERCIAL FISHERIES

May 1942

Washington, D. C.

Vol. 4, No. 5

SUMMARY

Special Articles

Retailing Fresh Fish in 56 Cities in the Eastern Third of the United States.--Recognizing the importance of fish retailing to the welfare of consumers and the fishery trade, the authors undertook a survey of this economic phase in 9,849 food stores scattered throughout 19 states. Recommendations to retailers include use of posters to advise patrons, bigger and better fish displays, education of clerks in fishery matters.

What Can Be Done for the Maine Fisheries?--Recognition of the fact that Maine's fisheries have declined so radically in recent decades prompts the author to review the causes and suggest remedies. Lack of modern processing machinery and certain distribution problems are among causes; recommendations for increasing, especially, the yield of lobster, shrimp, clams, and salmon fisheries, are included.

Fish Cookery Demonstration at Cincinnati.--Almost 2,000 home arts students and their teachers from nine Ohio high schools witnessed fish-cookery demonstrations sponsored by the Service. Similar programs, part of a wider educational project, may play a significant role in the nation's wartime economy.

Fresh Fish

During the week ended May 2, the all-commodity index of prices for nearly 900 series rose 0.1 percent to 98.7 percent of the 1926 average--the highest level since late in that year.

Manufactured fishery products for 1940 dropped 2 percent under the previous year; the 1941 pack of canned oysters in the United States went down 8 percent in volume, but up 14 percent in value over 1940; and the 1940 catch of fishery products for all sections of the United States and Alaska, except the Mississippi River area, dropped 9 percent in volume but went up 2 percent in value compared with the previous year.

Except for the fisheries of the Middle Atlantic States, those of New England, the South Atlantic and Gulf, and the Pacific Coast States, all decreased in volume of catch; uniformly, however, they showed increases in value of catch in 1940 over the previous year.

Frozen Fish

Holdings in domestic cold-storage plants of 48,579,000 pounds as of April 15, show a further drop of 22 percent under the previous month, but were 34 percent above the 5-year average for that date. Freezings for the month ending April 15 showed an increase of 38 percent over the volume frozen the previous month and were 28 percent over the general 5-year average for the same date. Haddock and rosefish fillets accounted for 47 percent of the items frozen.

Canned Fish

Canners' unsold stocks of salmon at the end of April totaled only 37,000 cases, as compared with the 10-year average of about 1.8 million cases unsold at this time.

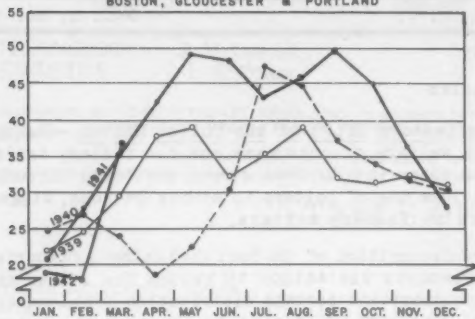
Gulf and South Atlantic States shrimp canners packed over 28,000 cases in April; total pack for 1942 was still 15 percent under the corresponding period of a year ago. The majority of the packers were not quoting prices on May 1.

Tuna pack for March was 58 percent under the total for the same month last year; mackerel, 41 percent under.

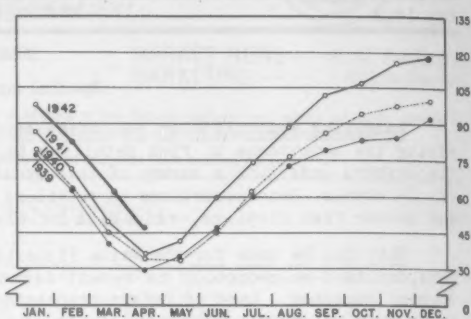
TRENDS OF FISHERY TRADE

In millions of pounds

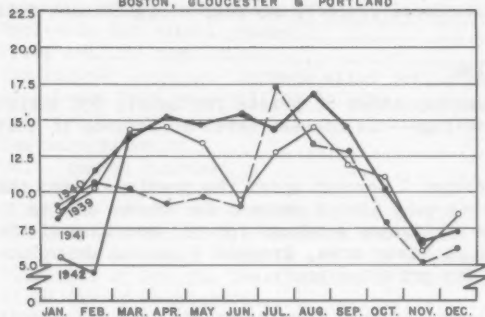
VESSEL LANDINGS, ALL FRESH FISH
BOSTON, GLOUCESTER ■ PORTLAND



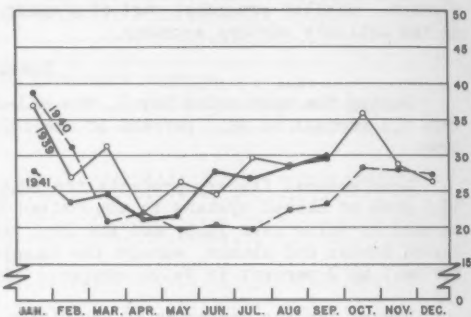
DOMESTIC COLD-STORAGE HOLDINGS OF FROZEN FISH



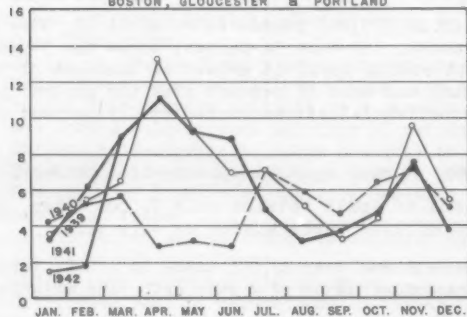
VESSEL LANDINGS, FRESH HADDOCK
BOSTON, GLOUCESTER ■ PORTLAND



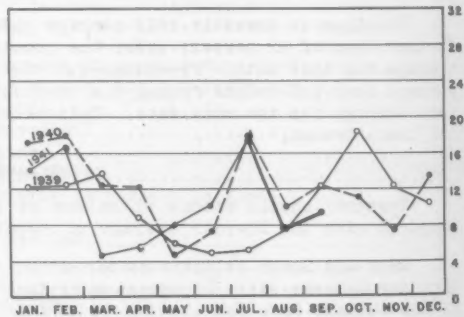
IMPORTS OF EDIBLE FISHERY COMMODITIES



VESSEL LANDINGS, FRESH COD
BOSTON, GLOUCESTER ■ PORTLAND



EXPORTS OF EDIBLE FISHERY COMMODITIES



RETAILING FRESH FISH IN 56 CITIES IN THE EASTERN THIRD OF THE UNITED STATES

By

Ralph Russell, Fishery Economist
andKeith O. Burr, Assistant Fishery Economist
Division of Fishery Industries
U. S. Fish and Wildlife Service

Introduction

Recognizing the importance of fish retailing to the welfare of consumers and the fishery trade, the Fish and Wildlife Service has made a study of the retailing of fish in food stores in 56 cities^{1/} located in the eastern third of the United States.^{2/} A discussion of the purpose, scope, and method of the survey was included in a summary of the data obtained in the East Central region and published in the March issue of *Fishery Market News*.^{3/} In the present report, therefore, a minimum of attention will be given to those aspects of the study.

Cities Surveyed

During the course of the survey 9,849 food stores were visited for the purpose of obtaining data on the retailing of fish. The 56 cities in which these stores were located and the regions established for the purpose of this study are given in Table 1.

TABLE 1

Regions and Cities Surveyed

Region	Cities		
North Atlantic	Boston, Mass.		
Middle Atlantic	Baltimore, Md.	Lancaster, Pa.	Norfolk, Va.
	Scranton, Pa.	Wilkes Barre, Pa.	
South Atlantic	Brunswick, Ga.	Charleston, S. C.	Gainesville, Fla.
	Jacksonville, Fla.	Orangeburg, S. C.	St. Augustine, Fla.
	Savannah, Ga.	Summerville, S. C.	Sumter, S. C.
		Walterboro, S. C.	
South Central and Gulf	Birmingham, Ala.	Chattanooga, Tenn.	Jackson, Miss.
	Knoxville, Tenn.	Memphis, Tenn.	Mobile, Ala.
		Nashville, Tenn.	
South Appalachian	Augusta, Ga.	Asheville, N. C.	Black Mountain, N. C.
	Charlottesville, Va.	Columbia, S. C.	Harrisonburg, Va.
	Hendersonville, N. C.	Lexington, Va.	Lynchburg, Va.
	Marshall, N. C.	Raleigh, N. C.	Richmond, Va.
	Roanoke, Va.	Spartanburg, S. C.	Staunton, Va.
	Swannanoa, N. C.	Weaverville, N. C.	
Great Lakes	Buffalo, N. Y.	Cleveland, Ohio	Detroit, Mich.
	Grand Rapids, Mich.	Lansing, Mich.	Milwaukee, Wis.
		Rochester, N. Y.	
East Central	Cincinnati, Ohio	Columbus, Ohio	Indianapolis, Ind.
	Louisville, Ky.	Pittsburgh, Pa.	
Central	Kansas City, Mo.	Minneapolis, Minn.	St. Louis, Mo.
	and Kansas	St. Paul, Minn.	

^{1/} These 56 cities include certain small towns in Virginia, North Carolina, and South Carolina. For the sake of convenience, however, these small towns will be included under the term "cities" throughout this report.

^{2/} This study was undertaken in the spring of 1939. Since a complete analysis of the data obtained is not yet ready for publication, the present report was prepared as a preliminary statement on some of the findings thought to be of greatest interest.

^{3/} "Retailing Fresh Fish in Five Cities of the Upper Ohio River Valley," by Ralph Russell and Keith O. Burr.

The choice of the cities to be studied was based on characteristics which indicated many important differences in conditions having a bearing on the fish retailing situation. The grouping of the cities into regions was determined largely on the basis of geographic location. Important differences in conditions obtaining in the various cities relate to racial characteristics of the population, number of inhabitants, per capita fish consumption, and the proximity of the cities to major commercial fisheries. In general, the differences between the cities which relate to location, racial groups, and size are fairly clear, but the variations in the amount of per capita fish consumption are not as well recognized.

Fish Consumption

Estimates of the volume of per capita consumption of fish in the cities surveyed vary widely from the estimated per capita fish consumption for the nation. Data on fish consumption in continental United States for the period 1930 to 1940 are given in Table 2.

TABLE 2

Annual Per Capita Fish Consumption, 1930 to 1940^{1/}

Year	Pounds of fish
1930	12.8
1931	12.6
1932	11.2
1933	11.8
1934	14.0
1935	14.7
1936	15.9
1937	15.7
1938	14.7
1939 ^{2/}	14.8
1940 ^{2/}	14.1

^{1/} These estimates were made by the Department of Agriculture, and published in "The National Food Situation", Washington, D. C., August, 1941, pg. 17, Table 6.

^{2/} Preliminary

The most recent data on fish consumption for many of the cities covered in this report have been made available by the Bureau of Labor Statistics of the Department of Labor. As a part of a general study of money disbursements of wage earners and clerical workers, made largely in 1935, this Bureau collected data on fish consumption by a sample of families for certain one-week periods. Estimates of the annual consumption based on these data were made by the Fish and Wildlife Service and appear in Table 3.

These estimates are subject to many limitations due to the character of the basic data and the method of computing the annual estimates. The basic data for various cities were collected during different seasons and to some extent during different parts of the same season. The estimates, therefore, are not entirely reliable, either for individual cities or for comparing one city with another. Consideration must be given to the known fact that in many cities purchases of fish are greater in the spring and less in summer than in other seasons. Despite the foregoing, however, the estimates are of value in providing a rough measurement of fish consumption.

In general, two factors seem to be associated with the cities showing the largest fish consumption. One is the proximity of the city to a major commercial fishery, and another is the presence of large Negro populations. The influence of one or both of these factors is especially indicated in the consumption figures for Boston, Norfolk and Portsmouth, Baltimore, Mobile, Richmond, and Jacksonville. The consumption of all fishery products and of fresh fish alone is greatest in these cities, which are all close to an important commercial fishery and with one exception have a population with a relatively high percentage of Negroes.

TABLE 3

Estimated Annual Per Capita Consumption of Fishery Products for Various Cities^{1/}

Region and city	Season ^{2/}	All fishery products Pounds	Fresh ^{3/} Pounds	Canned Pounds	Other ^{4/} Pounds
North Atlantic					
Boston	Spring	30.4	26.7	2.4	1.3
Atlantic					
Norfolk and Portsmouth	Spring	46.8	43.3	2.1	1.4
Scranton	Winter	10.0	8.1	1.8	0.1
Baltimore	Spring	25.8	22.5	1.8	1.5
Great Lakes					
Cleveland	Spring	10.5	7.6	2.4	0.5
Buffalo	Spring	16.0	12.5	3.2	0.3
Rochester	Spring	19.4	11.7	5.0	2.7
Detroit	Spring	10.8	6.2	3.8	0.8
Milwaukee	Spring	11.4	6.4	2.8	2.2
Grand Rapids	Spring	12.5	6.8	5.1	0.6
Lansing	Winter	10.0	4.3	5.1	0.6
East Central					
Pittsburgh	Winter	10.6	8.1	2.1	0.4
Cincinnati	Spring	13.1	10.5	2.3	0.3
Indianapolis	Spring	7.5	6.0	1.4	0.1
Louisville	Spring	13.1	9.2	3.6	0.3
Columbus	Spring	9.3	6.4	2.7	0.2
Central					
St. Louis ^{5/}	Spring	13.5	8.7	4.6	0.2
Kansas City	Spring	8.3	4.7	3.1	0.5
Minneapolis and St. Paul	Spring	9.2	4.5	4.2	0.5
South Central and Gulf					
Birmingham	Winter	11.2	7.1	3.6	0.5
Memphis	Winter and spring	11.1	7.0	4.1	
Mobile	Spring	26.2	21.5	3.4	1.3
Jackson	Summer and spring	6.8	4.6	2.1	0.1
South Appalachian					
Richmond	Winter	22.6	16.5	3.2	2.9
South Atlantic					
Jacksonville	Fall	19.1	14.6	2.3	2.2

^{1/} The data, for one-week periods, which form the basis of these estimates of consumption were collected by the Bureau of Labor Statistics, Department of Labor, and published in a series on money disbursements of wage earners and clerical workers, 1934-1936, Bulletins 636, 637, 640, and 641, by Faith M. Williams and Alice C. Hanson.

^{2/} The seasons listed are those for which the basic consumption data were collected.

^{3/} Includes oysters.

^{4/} Includes cured fish, dried fish, and other seafood.

^{5/} The data include both Kansas City, Kansas, and Kansas City, Missouri.

While the distance from a commercial fishery and the presence of Negro population are important, other factors undoubtedly influence fish consumption. The cities which were surveyed in the Great Lakes region are all close to a commercial fishery and are about equally divided above and below the national average. However, Negro populations in these cities are relatively low. On the other hand, Jackson, Memphis, and Birmingham have large percentages of Negro population, but the consumption of fishery products is relatively low, especially in Jackson. These cities, however, are not immediately accessible to supplies from a major commercial fishery.

It is believed that fish consumption is relatively low in many inland areas, not only because fishery products are less available, but also on account of population characteristics. Another factor involved is that people living at a considerable distance from major com-

mercial fisheries have had fresh and frozen fishery products available in large volume only for a relatively short time. The supplying of fish to these areas had to await the development of modern freezing, refrigeration, and transportation methods which have made noteworthy advances in the last twenty or thirty years.

Conditions in coastal areas go far to explain the greater consumption of fish in seaboard cities. People born and reared near the coast are exposed to the cultural influences associated with the sea, have more knowledge concerning fishery products, and through custom and habit eat fish more frequently than others. The fact that fishery products are immediately available near the seacoast is undoubtedly of considerable importance.

The more frequent consumption of fresh fish by Negroes, as compared to whites, is indicated by data in Table 4.

TABLE 4

Comparison of the Percentages of White and Negro Families in Various Cities Reporting the Purchase of Specified Kinds of Fishery Products During Certain One-Week Periods, 1934-1936^{1/}

City	Season ^{2/}	Families surveyed	Kinds of fishery products				
			Fresh	Canned	Cured	Oysters	Other
		Number	Percent	Percent	Percent	Percent	Percent
Baltimore							
White	Spring	314	51	10	2	7	6
Negro	Spring	95	75	13	-	2	-
Birmingham							
White	Winter	202	12	18	1	15	2
Negro	Winter	101	28	15	1	7	1
Cincinnati							
White	Spring	282	36	15	2	3	1
Negro	Spring	81	51	6	-	-	1
Indianapolis							
White	Spring	178	20	12	-	1	1
Negro	Spring	101	43	4	-	-	-
Jackson							
White	Summer	108	9	19	-	1	2
Negro ^{3/}	Spring	46	24	9	-	4	-
Kansas City							
White	Spring	252	16	18	1	2	-
Negro	Spring	68	25	13	-	-	-
Louisville							
White	Spring	117	26	18	-	3	1
Negro	Spring	62	50	11	-	2	1
Memphis							
White	Winter	114	16	16	-	4	-
Negro	Winter and spring	86	33	5	-	-	-
Mobile							
White	Spring	129	20	21	-	34	5
Negro	Spring	94	39	9	-	15	6
Norfolk-Portsmouth							
White	Spring	128	55	12	3	2	2
Negro	Spring	75	88	12	3	4	1
Pittsburgh							
White	Winter	346	29	15	1	3	1
Negro	Winter	97	41	10	1	7	-
Richmond							
White	Winter	156	27	21	7	32	1
Negro	Winter	86	63	15	7	15	-
St. Louis							
White	Spring	264	29	29	1	2	1
Negro	Spring	106	42	10	-	-	1
All Cities							
White		2,590	28	17	1	7	2
Negro		1,098	47	10	1	4	1

NOTE - See Table 3 for explanation of footnotes.

In every city the percentage of Negro families reporting the purchase of fresh fish exceeded the percentage of white families reporting such purchases. On an average, 47 percent of the Negro families reported the purchase of fresh fish, as compared to 28 percent of the white families. On the other hand, white families reported the purchase of canned fish more frequently than Negro families in all cities except Baltimore and the Norfolk-Portsmouth areas.

Table 5 shows the variation in the percentages of white families purchasing fresh fish. The greatest percentages of white families purchasing fresh fish were reported for Norfolk and Portsmouth, Boston, Baltimore, and Buffalo, while the smallest percentage was indicated in Jackson and Birmingham.

TABLE 5
Percentage of White Families in Various Cities Reporting the Purchase of
Specified Kinds of Fishery Products During Certain One-Week Periods,
1934-1936^{1/}

City	Season	Families surveyed	Kinds of fishery products				
			Fresh	Canned	Cured	Oysters	Other
		Number	Percent	Percent	Percent	Percent	Percent
Baltimore	Spring	314	51	10	2	7	6
Birmingham	Winter	202	12	18	1	15	2
Boston	Spring	425	70	19	5	3	4
Buffalo	Spring	243	48	21	1	2	2
Cincinnati	Spring	282	36	15	2	3	1
Cleveland	Spring	211	33	18	2	-	1
Columbus	Winter	170	15	12	-	12	1
Detroit	Spring	262	22	30	3	1	1
Grand Rapids	Spring	130	17	35	3	2	1
Indianapolis	Spring	178	20	12	-	1	1
Jackson	Summer	108	9	19	-	1	2
Jacksonville	Fall	155	41	18	-	11	10
Kansas City	Spring	252	16	18	1	2	-
Lansing	Winter	83	14	32	2	4	1
Louisville	Spring	117	26	18	-	3	1
Memphis	Winter	114	16	16	-	4	-
Milwaukee	Spring	333	24	18	4	-	7
Minneapolis	Spring	358	19	28	3	1	1
and St. Paul							
Mobile	Spring	129	20	21	-	34	5
Norfolk and Portsmouth	Spring	128	55	12	3	2	2
Pittsburgh	Winter	346	29	15	1	3	1
Richmond	Winter	156	27	21	7	32	1
Rochester	Spring	140	34	32	8	3	2
Scranton	Winter	231	42	18	-	2	-
St. Louis	Spring	264	29	29	1	2	1
All Cities		5,331	32	20	2	5	2

^{1/} These percentages are based on data collected by the Bureau of Labor Statistics, Department of Labor, in connection with a study of money disbursements of wage earners and clerical workers, 1934-1936.

Canned fish was purchased by only about two-thirds as many families as purchased fresh fish. Canned fish was included on grocery lists more frequently in Grand Rapids, Lansing, Detroit, Rochester, St. Louis, and Minneapolis and St. Paul than elsewhere. The data indicate that oysters were purchased by the greatest percentages of families in Mobile and Richmond, both of which are near important sources of this shellfish. Baltimore and the Norfolk-Portsmouth area are important distribution centers for oysters, but the percentages of families in these cities reporting purchases of this shellfish were relatively small.

In this connection, however, it should be pointed out that certain difficulties arise in the interpretation of the oyster figures. These difficulties relate to the season to which the primary data apply. The data on oyster consumption for many cities apply to the spring quarter, which includes months when oysters are coming on the market in large volume,

as well as periods when much smaller quantities are available. No information is available as to the weeks during the spring quarter in which the data were obtained; therefore, comparisons between cities may not be valid, as the figures for one city may be for weeks when oysters were in season, while the data for another city may apply principally to weeks when oysters were not available on the market.

Types of Organization and Kinds of Stores Surveyed

Some 72 percent of the 9,849 stores surveyed were combination groceries handling both groceries and meats. Fourteen percent were groceries without meat, seven percent meat markets, and four percent fish markets, while about three percent could not be classified in any of these groups. As compared with the 1939 census data for these cities, the sample consisted of a greater proportion of combination grocery stores and a smaller proportion of groceries without meats. The proportion of the total number of meat and fish markets in the sample corresponds closely with the census figures.

The 9,849 schedules were of two types. The first represented dealers who either handled no fresh fish,^{1/} handled it at irregular intervals, or refused to give detailed information. From these stores only a small amount of general information was obtained. The 5,952 stores falling in this group were principally independent or voluntary chain stores, handling both groceries and fresh meats. Less than 8 percent of these stores handled fresh fish, but about 22 percent reported sales of cured fish, and almost all of them handled canned fish.

The second and more detailed type of schedule was utilized for 3,897 stores which handled fresh fish regularly, and the data received from these stores provide the principal basis for this report. Of the 3,897 stores reporting the regular sale of fresh fish, 60 percent were classified as independent or members of voluntary chain store organizations,^{2/} 30 percent were corporate chain stores, and 10 percent were fish markets. By kind-of-business, about 77 percent were combination groceries, 3 percent groceries without meat, 8 percent meat markets, 10 percent fish markets. About 2 percent could not be classified in any of these categories. Tables 6 and 7, dealing only with the stores which handled fresh fish regularly, give the number of these stores in the various regions which reported specified kinds of business and types of organization.

TABLE 6
Kinds of Stores Surveyed

Region	All stores	Combination groceries	Groceries without meat	Meat and fish markets	Other
	Number	Number	Number	Number	Number
North Atlantic	246	174	3	49	20
Middle Atlantic	339	242	9	86	2
South Atlantic	93	51	-	39	3
South Central and Gulf	624	536	9	77	2
South Appalachian	507	427	17	61	2
Great Lakes	736	440	46	231	19
East Central	743	623	17	83	20
Central	609	532	2	65	10
Total	3,897	3,025	103	691	78

^{1/} As used in this report, fresh fish is a broad term including both fresh and frozen fish, shellfish and crustaceans.

^{2/} For the remainder of this report, voluntary chain stores will be included in independent stores, since both types are usually independently owned and operated.

TABLE 7

Types of Organization of Stores Surveyed

Region	All stores	Independent stores	Chain stores	Fish markets
North Atlantic	246	157	42	47
Middle Atlantic	339	158	100	81
South Atlantic	93	49	10	34
South Central and Gulf	624	350	231	43
South Appalachian	507	293	174	40
Great Lakes	736	388	266	82
East Central	743	433	260	50
Central	609	501	92	16
Total	3,897	2,329	1,175	393

Species of Fish Sold

Over 100 species of fish and shellfish were sold in appreciable volume in the stores surveyed. Dealers were asked to report all species which made up a significant part of their annual volume, regardless of the length of time during the year that these species were handled. Thus many species handled for only a part of the year were included. No estimates of the actual volume of each species sold have been made, but the percentages of stores reporting the various species in different regions give some indications as to the areas where various species have gained greatest acceptance.

In the North Atlantic region, represented by Boston, such species as haddock, cod, flounder, mackerel, swordfish, and salt-water smelt, as well as halibut and salmon, were handled by a majority of the stores. In addition, a wide variety of shellfish was sold, including oysters, shrimp, scallops, crabs, lobsters, and clams. Among the other species sold by appreciable percentages of the stores were shad and butterfish.

In the Middle Atlantic region substantial proportions of the stores reported cod, haddock, flounder, mackerel, shad, butterfish, porgy, squeteague (sea trout), and spot. Fresh-water species were represented principally by catfish, yellow perch, and carp. In this region, as in others, oysters and shrimp were handled by significant percentages of the stores. Crabs and clams were also reported frequently.

In the South Appalachian region substantial percentages of the stores in most cities sold such species as squeteague (sea trout), croaker, butterfish, haddock, and oysters. Other species very often handled were Spanish mackerel, king mackerel, shad, shrimp, and, in the southernmost part of the region, mullet.

In the South Atlantic region few species were handled generally by stores throughout the area. Croaker, squeteague (sea trout), mullet, and king whiting were sold by from 70 to 90 percent of the stores and sea bass by half as many, but few of the other widely distributed species were of great consequence in this region. Neither halibut, salmon, nor any of the important North Atlantic species were reported by substantial proportions of the stores, and except for sunfish, fresh-water varieties were not widely distributed. In this region too, however, oysters and shrimp were handled by large percentages of the stores.

Most of the species of fish and shellfish handled in the South Atlantic region were reported also by significant percentages of the stores in the South Central and Gulf region. In addition to croaker, squeteague (sea trout), mullet, and king whiting, many stores reported haddock, Spanish mackerel, red snapper, catfish, and buffalofish. It should be noted, however, that in the South Central and Gulf region only about one-third as many stores reported the sale of king whiting as in the South Atlantic region.

With some variation the same species which were important in the Great Lakes region were also widely distributed in the East Central and Central regions. These species, representing supplies from most of the major commercial fisheries, included blue pike, lake

herring, whitefish, lake trout, yellowpike, yellow perch, catfish, halibut, salmon, haddock, rosefish, oysters, and shrimp.

However, certain variations were noted among these three regions. Fresh-water smelt was reported sold by nearly 20 percent of the stores of the Great Lakes region, but by a much smaller proportion of stores in the East Central and Central regions. Yellow perch, whitefish, lake herring, and blue pike were of much less importance in the Central region than in the other two areas. On the other hand, lake trout and yellow pike were sold by a lesser percentage of the stores in the East Central region than in the Great Lakes and Central regions.

Some species of fish and shellfish were extensively sold in several regions, but had not gained wide acceptance in other sections of the country. In the North Atlantic, Great Lakes, East Central, and Central regions, halibut and salmon were reported by substantial percentages of the stores, but in the other regions these two species were of less importance. Whiting from the North Atlantic fisheries was sold by substantial percentages of the stores in the East Central and Central regions, but elsewhere fewer stores handled this fish. Such species as cod, haddock, flounder, rosefish, and mackerel were generally sold by many stores in the North Atlantic, Middle Atlantic, Great Lakes, East Central, and Central regions, but these species were of much less importance in the South Atlantic, South Central and Gulf, and South Appalachian regions. On the other hand, croaker, squeteague (sea trout), mullet, grouper, and red snapper were of more importance in the southern regions.

The fresh-water species were widely distributed in the East Central, Central, and Great Lakes regions, where substantial percentages of the stores handled such species as blue pike, lake herring, whitefish, lake trout, yellow pike, yellow perch, sheepshead, carp, and fresh-water smelt. Buffalofish, however, was more widely distributed in the South Central and Gulf region than anywhere else. Catfish was of some importance in all regions, but was sold by a greater percentage of the stores in the South Central and Gulf, East Central, and Central regions than elsewhere.

Oysters were reported by a greater percentage of the stores than any other species of fish or shellfish. In all regions at least 60 percent of the stores indicated appreciable oyster sales. Shrimp was reported by significant percentages of the stores in each region, but was sold by fewer stores than oysters. Among the other shellfishes, scallops, crabs, lobsters, and clams were handled by many stores in various regions, especially in the North Atlantic region.

Summary of Fish Retailing

In general, the retailing of fishery products in 56 cities of the eastern third of the United States was essentially a sideline activity, except in a relatively few stores, mostly fish markets. Of the 9,849 food stores surveyed, less than 45 percent handled fresh fish regularly. Fish markets and meat markets were important distributors of fishery products, but combination grocery stores constituted the most numerous type of outlet for these products. In the average combination grocery store, however, fish was handled only a part of the week and was displayed in cases primarily designed for meats. Relatively few stores promoted fish sales through any well-rounded sales program.

The volume of fishery products sold was customarily low and ordinarily amounted to only a very small part of total sales. About 38 percent of the stores surveyed sold less than \$500 worth of fresh fish each in 1938; 32 percent between \$500 and \$1,500; and approximately 27 percent over \$1,500 per store. Volume data were not obtained from the remaining 3 percent of the stores. This indicates that about 70 percent of the stores surveyed sold less than \$30 worth of fish per week. The majority of independent stores fell in the 0-\$500 per year group, while chain stores more frequently appeared in the \$500 to \$1,500 group than in any other. Most of the fish markets sold over \$1,500 worth of fish per year. These data are given in Table 8.

The greater part of the fish sales was concentrated on two or three of the later days of the week. About half of all the fish sales in the stores surveyed were made on Friday, and nearly one-fifth on Thursday. Saturday sales, about 13 percent of the total, exceeded those of any of the other days of the week. Data presented in Table 9 indicate that sales of fishery products increased from Monday through Friday, then dropped off sharply.

TABLE 8

Percentage of Different Types of Stores Falling in Specified Volume Groups

Classification of stores	Stores surveyed Number	Stores with annual dollar volume			
		0-\$500 Percent	\$500-1500 Percent	\$1500 and over Percent	Unreported Percent
Independent	2,329	53	29	15	3
Fish market	393	2	11	82	5
Chain	1,175	22	44	32	2
All stores	3,897	38	32	27	3

TABLE 9

Percentage of Fish Volume Sold on Each Day of the Week

Type of store	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Not Reported
Independent	3	5	7	16	57	11	-	1
Fish market	5	7	10	20	41	15	1	1
Chain	3	5	8	17	55	11	-	1
All stores	4	6	8	18	50	13	-	1

The advertising of fishery products in circulating media was restricted, not so much in the number of stores following this practice as in the amount of space and prominence given to the material on fish. About 28 percent of the stores used signs or posters to advertise fish on the inside of the store, while nearly 40 percent had this type of advertising on the outside. However, in all but a very few stores this advertising consisted of only one or two small signs or placards. Table 10 shows the percentages of stores with various amounts of inside advertising devoted to fish, and Table 11 gives similar data on outside advertising devoted to fish.

TABLE 10

Percentage of Stores with Various Amounts of Inside Advertising Devoted to Fish

Classification of stores	Stores surveyed Number	Large ^{1/} amount	Moderate ^{2/} amount	Small ^{3/} amount	None
		Percent	Percent	Percent	Percent
Independent	2,329	1	3	13	83
Fish market	393	6	6	19	69
Chain	1,175	3	6	39	52
All stores	3,897	2	4	22	72

1/ A large amount of advertising was defined as at least three large signs, four medium-sized signs, six to eight small signs, or the equivalent.

2/ A moderate amount of advertising was defined as at least one large sign, two medium-sized signs, three small signs, or the equivalent.

3/ A small amount of advertising was defined as at least one small sign.

TABLE 11

Percentage of Stores with Various Amounts of Outside Fish Advertising

Classification of stores	Stores surveyed Number	Large ^{1/} amount	Moderate ^{2/} amount	Small ^{3/} amount	None
		Percent	Percent	Percent	Percent
Independent	2,329	1	2	28	69
Fish market	393	11	14	53	22
Chain	1,175	1	4	36	59
All stores	3,897	2	4	33	61

NOTE - See Table 10 for explanation of footnotes.

In spite of the relatively small amount of emphasis given to fish sales, as indicated in the preceding discussion, most retailers considered fish a profitable item, as can be seen from the data in Table 12.

TABLE 12

Percentage of Stores Reporting Fish as Profitable and Not Profitable

Classification of stores	Stores surveyed	Stores reporting fish sales		Stores not reporting
		Profitable	Unprofitable	
	Number	Percent	Percent	Percent
Independent	2,329	82	17	1
Fish market	393	89	8	3
Chain stores	1,175	93	5	2
All stores	3,897	86	13	1

While certain characteristics of fish retailing were more or less consistent, as noted above, many variations were noted between different regions, between stores handling different volumes of fish, and between different types of stores. In cities near or immediately accessible to important commercial fisheries, the percentages of stores giving emphasis to fish sales were greater than in cities located at greater distances from the sources of supply.

The consumption of fishery products was greatest in areas where more attention was given to fish sales. In such areas greater percentages of the stores handle fish more than one or two days of the week than elsewhere, as seen in Table 13, and greater space in the available display cases was used for fresh fish, as indicated by data in Table 14.

TABLE 13

Percentage of Stores in Various Regions Displaying Fish for Specified Periods of the Week

Region	Stores surveyed	One or two days	Three or four days	Five or six days	Not Reported
		Percent	Percent	Percent	Percent
North Atlantic	246	27	5	49	19
Middle Atlantic	339	35	12	41	12
South Atlantic	93	1	8	90	1
South Central and Gulf	624	26	25	38	11
South Appalachian	507	16	30	35	19
Great Lakes	736	44	17	27	12
East Central	743	46	10	37	7
Central	609	58	7	19	16
Total	3,897	37	15	35	13

TABLE 14

Percentage of Stores in Various Regions Using Specified Lengths of Showcase for Displaying Fish

Region	Stores surveyed	Stores using 0-3 feet	Stores using 3-7 feet	Stores using 8 feet and over	Stores not reported
		Percent	Percent	Percent	Percent
North Atlantic	246	-	29	42	29
Middle Atlantic	339	16	32	31	21
South Atlantic	93	-	15	69	16
South Central and Gulf	624	25	28	13	34
South Appalachian	507	21	34	15	30
Great Lakes	736	31	28	23	18
East Central	609	61	12	9	18
Central	743	47	28	13	12
Total	3,897	32	27	19	22

The data on fish advertising at the store and in circulating media also demonstrated the greater emphasis on fish sales in some regions than in others. Further inter-regional variations related to the species and forms of fishery products sold, the type of equipment used, and the kind of circulating media employed for advertising. For example, data in Table 15 indicate inter-regional differences in the relative importance of the various forms of fishery products sold.

TABLE 15

Percentage of Fish Volume Sold in Specified Forms in Different Regions

Region	Whole	Fillets	Steaks	Other ready-to-cook	Unreported
North Atlantic	5	55	11	28	1
Middle Atlantic	36	19	11	25	9
South Atlantic	95	1	3	1	-
South Central and Gulf	52	18	18	8	4
South Appalachian	44	13	5	32	6
Great Lakes	35	50	10	-	5
East Central	47	45	6	2	-
Central	39	41	12	-	8
Total	39	35	9	13	4

Evidence clearly indicates that the volume of fish sales was directly related to the emphasis given to merchandizing this line. With few exceptions, stores in all areas and of all types in the higher volume groups promoted fish sales by advertising and displaying fish throughout the week more frequently than lower volume stores. Also, as can be seen in Table 16, higher volume stores more frequently than other stores used price lists, species lists, and price tags and followed other practices designed to stimulate consumer interest in fishery products. Factors other than those relating to emphasis given to fish sales were undoubtedly of importance in accounting for the volume of fish sales in some stores, but in general the relationship between sales effort and sales volume was too consistent to question.

Besides differences in the characteristics of fish retailing which were attributable to the nature of the regions in which the stores were located or to differences in the dollar volume of fish sales, there were other variations which clearly traced to differences in types of stores. Fish markets and independent stores delivered fish orders to customers far more frequently than chain stores. Fish markets more often than not had open displays and used ice for refrigeration, while in both chain and independent stores displays were more frequently closed than open. Also, both chain and independent stores utilized mechanical refrigeration more often than did fish markets. As compared to fish markets, the other two types of stores ordinarily sold greater proportions of their total volume in ready-to-cook forms, as indicated in Table 17. Fish markets sold a larger percentage of their volume as whole fish than did other stores. Unit sales to final consumers in fish markets were greater in weight than those in the other types of stores. It is believed that in corporate chain stores, and to a lesser degree in voluntary chain stores, certain features of fish retailing reflected uniformity in sales and advertising policy and in the species and forms of fishery products handled.

TABLE 16

Percentage of Stores with Price Lists, Species Lists and Price Tags

Classification of stores	Stores surveyed	Price lists	Species lists	Price tags ^{1/}
	Number	Percent	Percent	Percent
Weekly volume of fresh fish sales				
Under \$10	1,497	12	11	10
\$10 to \$30	1,244	24	23	20
\$30 and over	1,040	33	29	30
Unreported	116	16	15	28
All stores	3,897	22	20	19

^{1/} A store was credited with using price tags only if a majority of the fishery products displayed were tagged.

TABLE 17

Percentage of Fish Volume Sold in Specified Forms by Different Types of Stores

Type of store	Whole	Filleted	Steaks	Other ready-to-cook	Unreported
Independent	32	41	10	13	4
Fish market	48	26	9	14	3
Chain	31	42	11	12	4
All stores	39	35	9	13	4

Conclusion

The outstanding conclusion from this study is that the bulk of stores retailing fish could do a great deal to develop their fish business, and few stores are doing a job that could not be improved. Practices which unquestionably would be of value in this respect include the following:

1. Using placards and posters at the stores to call the attention of consumers to fishery products.
2. Giving fish greater space and prominence in advertisements appearing in circulating media.
3. Using larger, more strategically-located displays with a wider variety of species and forms of fishery products.
4. Taking greater care in arranging fish displays.
5. Keeping the fish counters and display cases scrupulously clean and free of any undesirable odors.
6. Encouraging sales clerks to learn enough about fishery products so that they can inform housewives as to the variety of species and forms of fishery products available, the nutritional value of fishery products, and methods of preparing seafoods for consumption.

O-O-O

WHAT CAN BE DONE FOR THE MAINE FISHERIES?

By

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From the early years of the American Colonies, Maine has been famed for her fisheries, but if one can judge by the record, this fame is more for past than present accomplishments. In 1898, just over 40 years ago, Maine fishing boats and fishermen landed almost 150 million pounds of fish which brought them nearly \$2,375,000. Forty years later their catch had dropped to less than 100 million pounds and it brought them but little more than in 1898, and this in the face of much higher production costs. The fishing industry in Maine not only has failed to develop with the passing years, but actually has declined.

NOTE: - This article, except for a few recent changes, was prepared in the spring of 1940 and published in the October 1940 issue of the Maine Fishery News. Since then the War has caused some rather extensive changes in the Maine fisheries, but it is probable that many of these will disappear in the post-war period when we return to a normal peace-time economy. The article was worked out as an attempt to provide a rational basis for planning the future development of the Maine fisheries. It is to be noted that the Maine Department of Sea and Shore Fisheries and others interested in the Maine fisheries have been increasingly and effectively active in recent years in various projects designed to improve the status of the Maine fishermen and fishing industry.

1/ The average for 1936-38. These were the last years of normal peace-time economy and, therefore, are more representative of usual conditions than production in the following years. The figures for 1939-41 differ considerably and in most cases are progressively higher as a result of the War. Thus an increase has resulted in the value and catch of herring due to the cutting off of the European product from United States markets; but there was a decrease in the value of lobsters in 1939, in the face of generally-higher prices for fish, for the closing of European markets to Canadian lobsters diverted increased quantities to the United States.

The stagnant condition of the Maine fisheries up to 1938 is even more marked by contrast with developments in another important New England State, Massachusetts. About 40 years ago, Massachusetts boats and fishermen landed 251 million pounds of fish, 1-2/3 as much as Maine, and this catch brought the fishermen nearly \$4,500,000. Forty years later, the Massachusetts catch had more than doubled to 521 million pounds, over 5 times as much as Maine, and the value to the fishermen had about trebled to reach over \$13,000,000. Thus, the value of the Maine fisheries in 40 years declined from about three-fifths of the Massachusetts value to one-fifth.

The records available are not sufficiently complete to show the relative income of regular fishermen in present and past years, but the overall average value of the catch per fisherman (regular and casual) in 1898 was: Maine, \$313 and Massachusetts, \$432; while in 1936-38 it averaged Maine, \$451 and Massachusetts, \$1,310. In view of the fact that in 1898 all of the boats were propelled by sail or oars while in 1938 most of them were powered by motors, it is obvious that operating costs have increased greatly. The Department of Labor indexes also show that the general cost of living has increased tremendously during these years. From 1913-38, food increased 22 percent, clothing 48 percent, house furnishings 75 percent, and miscellaneous items 100 percent; from 1898-1938 the increase must have been even greater. In Massachusetts, the average share in the catch also has increased several times over, but in Maine, it has not. The overall result has been that while the average Maine fisherman's general production costs have increased greatly, his share in the catch has increased but a little, leaving him to face increased living costs with an ever-narrowing margin of profit.^{1/} In these figures lies much of the explanation for the present economic condition of the Maine fisherman.

The contrasting progress of the Maine and Massachusetts fisheries naturally brings up the question of cause: Can the Maine fisherman be so much more lacking in initiative and imagination than his Massachusetts neighbor, or, is the difference due to technological factors? In other words, is the difference due to men or to machines? A close study of the fisheries during the past 40 years indicates that the latter explanation comes nearer the truth. In 1898, the fisherman's catch was sold fresh in nearby markets, or was salted up so that it could be distributed over a wider area. In the case of salt fish the importance of time and transportation costs had been reduced to a minimum, since salt fish, within limits, would keep indefinitely and the weight of the article to be shipped was but 1/2 to 1/3 that of the fresh or frozen product. Thus, the fish landed along the Maine coast could be sold fresh in nearby markets, or could be salted and stored until sufficient quantities had been accumulated for bulk shipment to more distant points. The importance of distance from the market thus was greatly reduced since the time required for distribution was no longer of primary importance; opportunity for accumulation of sufficient quantities for bulk shipment reduced the unfavorable differential against scattered Maine catches, and preparation in salt or dried form reduced the relative cost of shipping. Consequently, although the market for fresh fish was more limited in Maine, the salt product could compete on nearly equal terms with the Massachusetts catch.

With the development of filleting, quick freezing, and improved methods of cold-storage and shipping by refrigerator car, the bulk market for salt fish was displaced largely by one for fresh and frozen fish. Preparation and distribution of these products could be done most economically at ports with an extensive market for fresh fish, since a large supply of fish already was available; nearness to the principal fishing grounds was advantageous, since the catches could be landed at shorter intervals and therefore in better condition and at lower cost; while availability of extensive railway lines and proximity to the inland markets were advantageous, since shipping time and costs were thus reduced and frequent shipments were possible.

All of these factors favored Boston over the scattered Maine fishing ports, and Boston men took the lead in developing improved methods of processing and shipping fresh and frozen fish. All but one of these factors also favored New York over Boston, but that one, distance from the fishing grounds, over-balanced the others and gave Boston the margin needed to forge ahead. Thus, the development of Boston as the dominant North Atlantic fishing center arose because Boston men were able to see, and take advantage of, technological developments which gave them an advantage over their competitors.

The effect of the above factors is reflected in the development of the respective fisheries. The Massachusetts catch of species particularly suitable for the new processing
^{1/} Also see Ackerman, Edward A., 1941. "New England Fishing Industry"

methods, haddock, rosefish, cod, pollock, and whiting increased from 155 million pounds in 1898 to 385 million pounds 40 years later, and this accounted for nearly all of the 40-year increase in the Massachusetts catch; while the same species in Maine actually declined over the same years from 35 million pounds in 1898 to 17 million pounds in 1937. The cause of the decline in Maine is due in part to the decrease in abundance of these species on the inshore grounds, but unfortunately, the extent of the decline cannot be determined since adequate catch records are not available. However, the main reason for the difference between Maine and Massachusetts developments lies elsewhere, for the offshore banks, from which Massachusetts draws much of her supply of fish, are equally open to Maine fishermen. The fact that they have not been exploited by Maine boats is not due to lack of initiative, but to the handicaps already mentioned: greater distance from port, lack of an extensive fresh fish market, greater shipping time and costs, and lack of frequent shipping service from the scattered fishing ports along the coast.

An understanding of the differences between Maine and Massachusetts conditions makes it clear that the problems of the Maine fisheries cannot be solved by extensive adaptations from the Massachusetts industry, although many ideas and methods can be borrowed with profit. Any attempt to solve the problem by a large scale development of a big-boat offshore fishery is likely to result in failure, due to the marketing and shipping advantages possessed by Boston.

Possibly an exception should be made here for Portland, since this port is slightly closer to the Nova Scotian banks than Boston (although farther from South Channel) and the increased development of transportation by refrigerated truck has reduced the Boston rail advantage. There also may be certain advantages in labor costs due to location in a smaller industrial center.

So far, we have considered some of the disadvantages of the Maine groundfish fisheries, but they also enjoy certain advantages. First, the Maine ports lie close to extensive inshore grounds which furnish a limited supply of such species as haddock, cod, flounder, rosefish, hake, mackerel, whiting, and pollock. These ports also lie closer to potential markets in Maine, northern New Hampshire, and Vermont than do ports in other states. To profit from these two advantages, several things appear necessary: First, the supply of fish must be so managed that the abundance remains high enough to provide good catches; second, transportation costs must be reduced by concentrating landings at fewer points, and establishing some kind of pick-up service so that full loads will be available at frequent and regular intervals; third, a steady source of supply must be available through use of seaworthy equipment which can operate regularly, except in the worst kind of weather, and through provision for cold-storage holding facilities to fill in when the fresh supplies fail.^{1/} Development of consumer demand to use fish in season also is important, since many of the Maine fisheries are seasonal in nature and overhead costs will be reduced if the market can be educated to take fish when available fresh and in large quantities. With a steady supply of fish and regular low-cost truck transportation, it should be possible for the Maine fisheries at least to supply their own markets and through suitable cooperative advertising develop an increased demand. To go much beyond this limit and successfully compete in the market of the Middle West with the enormous production of the highly mechanized otter-trawl fleet fishing out of Boston, will require that production costs be kept exceptionally low by maintaining a high level of abundance on the shore grounds or by developing unusual efficiency in processing and shipping to offset the advantages in distance, shipping costs, and quantity, possessed by Boston fish.

In the preceding have been considered only the possibilities and methods for increasing the extent and prosperity of the Maine fisheries for staple species which usually compete with the landings of offshore fish at the major Massachusetts ports. In contrast to these species for which apparently there is a possibility for but limited development, there are others for which the only limit is the supply that can be maintained. If we again consult the records for 1898 and 40 years later, it will be noticed that in contrast to the fisheries previously discussed, the catches of several species have declined little in quantity and actually have held their own or increased in value. These species are lobsters with a 32 percent decline in quantity and a 50 percent increase in value, and clams with a 26 percent decrease in quantity and a 1 percent increase in value. Herring also might be added to this list, for although the year-to-year catch has been variable and the quantity and value of the 1936-38 catch are below the 1898 figures, the average for the past several years, except for 1938 compares favorably with 1898.

^{1/} The recent rapid increase in rosefish landings from about 8,000,000 pounds in 1940 to 21,000,000 in 1941 is an example of the possibilities when these conditions can be approximated. A considerable supply of rosefish is available close to Maine ports, practically all landings are concentrated at two points Portland and Rockland, both of these ports have freezing and cold-storage facilities, and for the most part, fishing is carried on by relatively efficient and seaworthy boats.

It will be noted that, except possibly for clams, there is no nearby native production of these species on a large scale with which the Maine catch must compete. To this list might be added the under-exploited Northern shrimp and over-exploited Atlantic salmon. The latter two are of no appreciable value at present, but on the basis of knowledge now available it appears that if properly handled a market could be developed for the former and an adequately-financed and properly-directed restoration program would bring back the latter to the level where it would make a considerable contribution to both the sport and commercial fishery.

This brings us to the practical question as to what can be done to maintain and, if possible, increase the yield of these fisheries which occur in the inshore region.

Of first importance is the lobster fishery, for it is and should remain Maine's most valuable marine resource. The remedy usually proposed as a cure-all for the low earning of the thousands of lobster fishermen is a tariff on imports. However, as long as our own lobster supply is limited by a declining abundance along our coast, it appears likely that it will be difficult to obtain permanent tariff protection. Under such conditions it has been the general policy of our tariff makers to permit the importation of foreign products in order to help supply our markets without further depleting our own fisheries.

A more permanent solution of the lobster fisherman's problem would be a considerable increase in lobster abundance. This would result in increased catches and consequently, lower production costs so that the Maine catch could compete more profitably with Canadian imports. An increase of 20 to 40 percent in the catch per pot would help the fisherman's income about as much as a 20 to 40 percent increase in price resulting from tariff protection.

All things considered the most practical and permanent solution of the long-range problem is to manage the fishery so that the abundance of native lobsters will be increased and production costs correspondingly lowered. Development of methods by which this may be accomplished is at present being studied intensively by the United States Fish and Wildlife Service in cooperation with the Maine Department of Sea and Shore Fisheries. The principal work now under way includes biological studies to determine how regulations can be improved to provide for the greatest natural production of lobsters and development of improved methods of artificial rearing to obtain the maximum hatchery production.

Probably clams are Maine's next most valuable (actual and potential) marine resource, but for this product there is considerable competition with other clam producing areas on the East coast. In order to compete with them for the available market, production costs must be kept low and this requires the maintenance of a high level of abundance and efficient methods of regulated clam farming. This resource deserves much more attention than it has received in the past. Recently, it has benefited by the N. Y. A. Shellfish Conservation Project for Maine.

The Maine herring fishery ranks high in quantity but not so high in value and seems to have neither gained nor lost much ground during the past 40 years although in some recent years it has been considerably below the level of some of the intervening years. In view of its erratic behavior in past years and since in normal times its product must meet with serious competition from both West Coast and foreign production, future possibilities are rather uncertain. This is another species which needs extensive biological study to determine the condition of the stock and the potential supply.

This brings us to the potentially valuable fishery for Northern shrimps. Exploratory work done in 1936 and 1937 proves that this species can be taken in commercial quantities at least during the winter months, and a general experience would indicate that it is appetizing when properly preserved, cooked, and served. The problem appears to be to develop a market and judging by results over the past several years, this cannot be done unless some organization is willing and able to gamble on the cost and effort required for such an undertaking. Until such an effort can be made on an adequate scale the shrimp fishery seems doomed to languish in neglect.

The final possibility appears the most intriguing gamble of them all, for it involves, not the management of a present resource, but the restoration of one which has never been a reality to most of the present generation of fishermen. This is the Maine salmon fishery. At one time, Maine's salmon fisheries yielded thousands of dollars to the fishermen but that day is long past. As the result of dams, pollution and over-fishing the salmon runs have been virtually exterminated until at present only a remnant survives in the Penobscot

and other rivers of Eastern Maine and most of these runs have been maintained principally by means of artificial propagation.

In recent years, conditions on some of the streams have been considerably improved through the abandonment of sawmills and the construction of fish ladders by the State Department of Inland Fisheries. Biologists of the United States Fish and Wildlife Service have made a general survey of available information bearing on present conditions and concluded that the situation appeared to be favorable for restoration of self-perpetuating salmon stocks in some of the New England rivers.^{1/} To accomplish such a restoration project, it will be necessary to carry out extensive surveys and experiments over a period of years, and to establish adequate management practices and regulations. If the full support of both commercial and sport fishermen can be obtained and adequate facilities provided, there is an excellent probability that the salmon supply can be built up to a level where large numbers of fish will be available to the sportsman, and in addition, thousands of pounds of salmon could be taken once more by the commercial fisherman not only in the shore traps, but also on the line trawls and gill nets fished along the shore. There is every reason to believe that with proper study and management there would be enough salmon for both groups of fishermen. The income from both of these sources would supply much needed new wealth to the small communities along the coast. Little is being done in this field at present.

An attack on some of the above problems now is under way. In addition to the work of the Maine Department of Sea and Shore Fisheries, the studies on lobster already mentioned, and the attempt to get an adequate program started on salmon, the United States Fish and Wildlife Service has work under way on haddock and flounders, and a study was made in 1940 of transportation methods and costs, production costs, and present and potential marketing areas for Maine fishery products. The latter work was done by Dr. Edward Ackerman of Harvard University, in cooperation with the United States Fish and Wildlife Service and the Maine Department of Sea and Shore Fisheries. As a result of this study, Dr. Ackerman has made specific recommendations for better organization of transportation and marketing facilities.

Permanent reversal of the past 40 years' declining trend of the Maine fishing industry depends on the solution of some or all of the problems which have been discussed and making best use of those natural advantages possessed by Maine. The extent to which this will be successful will depend primarily on the degree to which those concerned with the Maine fisheries will give time and study to solution of these problems and application of the results obtained. The principal problems appear to be:

1. Maintenance of fish stocks at levels that will yield high returns to the fishermen.
2. Provision of steady supplies through use of seaworthy fishing equipment and cold-storage holding facilities.
3. Development of an effective and economical system for concentrating landings to provide economical loads and direct and rapid transportation to the best markets.

The first appears to be chiefly the job of the State and Federal governments with the cooperation of the fishermen. Without the active and enlightened support of the latter, the former can do little. The two others can be accomplished through cooperative action among the fishermen or through the efforts of private individuals interested in the fisheries.

Others can help the Maine fishermen in studying these problems, but no one can apply the results of the studies except the Maine people themselves.

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FISH COOKERY DEMONSTRATION AT CINCINNATI

As part of an educational program to develop domestic seafood consumption, especially in inland cities, Cincinnati, Ohio, was host recently to a series of practical fish-cookery demonstrations sponsored and presented by specialists of the Service's Division of Fishery Industries.

Almost 2,000 home arts students and their teachers, from nine high schools in this Ohio city, witnessed these initial demonstrations. On a two-week schedule, 40 fish-cookery classes were held, during the course of which halibut, smelt, haddock, rosefish, oysters, shrimp, red snapper, canned salmon, and locally-smoked sablefish were prepared according to recipes

^{1/} "Restoration of the Atlantic Salmon in New England." Transactions American Fisheries Society, Vol. 70.

tested in laboratories of the Service. These fish and all other food supplies needed were contributed by the local association of fish wholesalers and food chains.

The Cincinnati program was under the direction of Cyrus H. Chilton, Fishery Marketing Specialist of the Service stationed in southern Ohio. Assisting him and acting as lecturer and preparator of the fish menus was Mrs. Elizabeth F. Whiteman, Service technologist attached to the laboratory at College Park, Maryland. The Cincinnati committee through which the classes were organized consisted of Miss Charlotte M. Ullrich, Director of Home Arts for Cincinnati Public Schools, and Mrs. A. H. Christen, Chairman of the local fish association.

This work in Cincinnati fits into the larger program conceived some two years ago by the Service, which aims at increasing the consumption of seafoods by encouraging dealers to place more emphasis on fish and by disseminating a wide variety of consumer information, ranging from current market reports to methods of cooking. In this program radio, newspaper, trade publications, and dealer tie-ups are utilized.

Cincinnati was the second of those cities selected to receive benefits from the co-operative program. Pittsburgh, Pennsylvania, was first, where the project has been in operation for over a year; Cincinnati and Columbus followed, with Dayton and the Cleveland, Akron, Canton, and Youngstown area next. These latter northern Ohio cities have been drawn into the project only since the first of this year. Recently the program has been initiated in Des Moines, Iowa, and nearby cities.

Armed with statistics about the retail fish trade in fifty-six American cities, the Service specialists enter new territory with credentials from the Government giving them full authority to handle a mission, namely, to push the sale of fish, both for producer and consumer benefit, but only as impartial Federal agents.

Foundation for the projects was laid in a request by the President through his Consumer Division of the original National Defense Advisory Commission, as follows:

"Total defense requires a nation of strong, healthy people. This means that health-building foods must be brought within the reach of all consumers. With our complex market organization, consumer-buyers need expert help in securing information on the basis of which to make their daily purchases of food, the largest single item in their cost of living.

"Daily market news broadcasts, based upon a comprehensive survey of the entire market and provided by Government agencies concerned with food products and their distribution, are needed to tell housewives which foods are plentiful and good buys. Particularly needed are broadcasts concerning foods which protect health, methods of preparing them, and information concerning their availability."

Upon their arrival in each city, Service agents confer with fish wholesalers, retailers, representatives of chain stores consumer organizations, and other interested parties, making plans for providing consumers of fishery products with the services requested by the President.

Arrangements are made for newspapers to feature seafood recipes and menus, as well as informative materials regarding various species of fish, and consumer hints about their selection and preparation. Cooperating radio stations broadcast spot announcements four times weekly. On Mondays and Thursdays these announcements, following a brief, concise pattern, recommend two good fish buys that will be available on the following day. These tips are based upon current information obtained by the agent. On Wednesdays the brief scripts give the housewife hints on ways and means of preparing seafoods not commonly known; on Saturdays the streamlined "spots" present recipes or menus featuring seafood suggestions.

Besides providing complete information for consumers of fishery products, Service agents stimulate cooperative attacks on mutual problems by the wholesale and retail trade, and stand ready to assist with latest available information on current production, cold-storage holdings, and other matters of interest to the fishery trade. New problems arising out of the war are tackled, difficulties studied, and solutions suggested.

It is believed that this far-reaching program may play a significant role in the wartime economy. Vast supplies of almost every kind of canned fish are required for our military forces. Moreover, huge quantities of the better-known seafoods are in demand for our armed forces in camp.

Thus, to maintain an adequate amount of fishery products in their diet in the face of shortages of canned fish, and possible shortages of certain popular species, the civilian population will become increasingly dependent on the lesser-known varieties of fish. To help make these necessary adjustments in consumption habits, the program of the Fish and Wildlife Service will seek to acquaint consumers with methods of selecting, preparing, and cooking those lesser-known species which are as nutritious and tasty as those with which most housewives are already familiar.

Projects similar to the recent Cincinnati cooking demonstration may be of considerable value in assisting consumers to adjust consumption habits to supplies available. While consumers are adjusting consumption, the fishery trade will necessarily face many new problems, especially in supply. Here, too, the program of the Fish and Wildlife Service is designed to help overcome wartime obstacles to a free, continuous flow of fishery products, from fisherman to consumer.

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REPRODUCTION IN THE DOGFISH

Most fishermen know that dogfish produce fully developed active young, according to a biological study of dogfish made in 1929 and 1930 appearing in Progress Report of the Pacific Coast Stations, No. 51, issued by the Fisheries Research Board of Canada. But not many people understand that the young are carried for a long time--nearly two years. This was found out by measuring the embryos in the oviducts of female dogfish and examining the eggs in the ovaries. In general the observations indicated that if the reproductive cycle of two representative female dogfish could be followed through two years, it would be found, for example, that during the first winter season one female dogfish would have minute embryos in its oviducts and small eggs in its ovaries while a second female would have 6-inch embryos in its oviducts and small eggs in its ovaries. The definite relation in size of eggs and embryos would carry through the year until in the autumn the first female would have 3½-inch embryos in its oviducts and small eggs in its ovaries while the second female would have 9½-inch young almost ready for independent life in its oviducts and enlarged eggs in its ovaries. During the second autumn the minute embryos in the oviducts of the first female would have reached 9½-inches and be almost ready for birth.

From a table included in the report it is apparent that at any season at least two stages of the reproductive cycle are present in the dogfish population. As would be expected, a certain amount of variation in actual measurements occurs, but, in general, no great differences are observed. It is concluded, then, that the female dogfish carries her young for approximately two years, as that is the only reasonable explanation for the observed facts.

It appears that the new eggs are ready to pass from the ovaries into the oviducts of the female where fertilization by the male takes place soon after the birth of the young. This idea is in agreement with the observation that adult female dogfish are not commonly found without eggs or embryos in their oviducts. The young are born and breeding takes place during the winter months.

Most species of fish produce large numbers of eggs; the salmon, 1,200 to 12,000; the herring, 8,000 to 40,000; the lingcod, 150,000 to 500,000; etc. Such is not the case with the dogfish. The largest number of developing eggs found in a dogfish was thirteen and sometimes as few as four are to be found. Large fish usually have eight to ten developing eggs and small mature females five or six.

In summary, the attention of the fishing industry and fishery administrators is called to two points in which dogfish are unlike other intensively exploited species of fish which have been studied: (1) Dogfish produce less than fifteen young at a time. (2) They apparently produce broods in alternate years only. It is likely that these observations will influence the way in which the dogfish population reacts to the effects of intensive fishing, but it cannot be even surmised at the present time whether the difference will be favorable or otherwise for the continuance and expansion of the dogfish fishery.

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HATCHING OF THE BLUE CRAB, CALLINECTES SAPIDUS (RATHBUN)

Since 1940, efforts have been made to devise a method for hatching eggs of the blue crab, Callinectes sapidus (Rathbun), in the laboratory and in nature on a large scale, according to a report in Science by Margaret S. Lochhead, John H. Lochhead and Curtis L. Newcombe in Contribution Number 8 of the Virginia Fisheries Laboratory and the Department of Biology, College of William and Mary. The egg mass or "sponge" contains upward to two million eggs. When once it was found possible to hatch large quantities of eggs to the first true zoea stage, attempts were made to induce further normal development of these zoeae.

In 1940, positive hatching results were obtained by removing masses of eggs, about one cubic inch in size, from a single "sponge" and placing them in large well-aerated tubs, in some of which the water circulated slowly while in others the egg masses were moved through the water so as to simulate natural conditions. Considerable numbers of eggs were hatched under these conditions, but numerical counts were not made to indicate the percentage that hatched into either the prezoal stage or the first true zoal stage.

In 1941, it was found that "sponges" may be removed from freshly gathered crabs in the field or from those that have been brought to a commercial crab house, transferred to the laboratory, cut up into small pieces and hatched out in shallow pans. Under favorable conditions, the percentage of eggs that hatched into the first true zoal stage was 90. When hatching occurred under unfavorable conditions, the larvae usually emerged bearing one or both of the following: inner egg shell membrane and the prezoal skin.

Under laboratory conditions, it was possible to rear the larvae from the first true zoal stage to the second stage. This provides a positive basis for identifying these zoea of the blue crab in plankton. Reasonably certain recognition of further zoal stages of this species should be possible by using the characters recently listed by Aikawa.^{1/}

WHOLESALE AND RETAIL PRICES

During the week ended May 2, the Bureau of Labor Statistics' comprehensive index of nearly 900 wholesale price series continued to rise. With a gain of 0.1 percent, it advanced to 98.7 percent of the 1926 average--the highest level since late in 1926. The index rose 0.8 percent since early in April, and was 18.6 percent higher than for the same period in 1941.

The upward price movement was led by an 0.3 percent advance for foods: average prices of foods in primary markets rose 2.8 percent in April, and were more than 28 percent higher than a year ago.

In 51 cities the average retail price of a 1-pound tall can of pink salmon in mid-April was 21.6 cents--30.9 percent above the comparable date last year, and 0.9 percent above mid-March. The average retail price for red salmon was 39.7 cents per 1-pound tall can, 46 percent more than in mid-April 1941, and an advance of 1.3 percent over last month.

The family food bill rose 0.8 percent between mid-March and mid-April, as retail prices of many foods continued to advance. Retail food costs for April 14 were 18.9 percent higher than in April 1941. The principal increases--ranging from 21-41 percent, were reported for fruits and vegetables, beverages, sugar, pork, fish, eggs, fats, and oils.

PRICE CEILING REGULATIONS

The original order in regard to general price ceilings was published under date of April 28, 1942, by the Office of Price Administration under the title of General Maximum Price Regulation Bulletin No. 1.

The regulations, which took effect on retail sales on May 18, 1942, and on wholesale transactions on May 11, except fresh fish and seafoods from the price ceilings. For commodities not excepted--which include frozen fish--the order provides that no person shall sell and none shall buy at a price higher than the highest price which the seller charged during March 1942.

Dealers should consult the Regulation and its interpretations in order to understand how to comply with its provisions. Those wishing to obtain copies of this Bulletin should write to the Office of Price Administration.

^{1/} H. Aikawa, Rec. oceanogr. Works Japan, 9:87, 1937

NEW ENGLAND LANDINGS INCREASE AFTER SETTLEMENT OF INSURANCE DISPUTE

The release of the Boston large otter trawl fleet upon conclusion of the tie-up resulting from a dispute over war risk insurance was reflected in increased landings at Boston, Gloucester, and Portland, during March. In 709 trips to the fishing banks, 222 vessels of 5 net tons capacity or over made landings at Boston amounting to 24,553,000 pounds, valued at \$1,420,089; at Gloucester, 10,447,000 pounds, valued at \$348,756; and at Portland, 1,877,000 pounds, valued at \$65,251.

The receipts of all important items exceeded those of February, and landings of haddock, rosefish, and flounders were appreciably higher than those during March 1941. As a result of the small landings during January and February, receipts at the three ports during the first three months of the current year were 24 percent below those in the corresponding period in 1941. However, fishermen received a greater return for their catch since the over-all weighted average price for landings of all species in the first three months of 1942 amounted to 5.45 cents per pound as compared to 3.75 cents for the corresponding period in 1941.

Landings by Fishing Vessels at Boston and Gloucester, Mass., and Portland, Me.

Species	March 1942		February 1942		March 1941		Three months ending with—			
	Pounds	Cents*	Pounds	Cents*	Pounds	Cents*	March 1942		March 1941	
Cod	8,514,485	4.96	1,837,822	8.27	9,022,485	3.38	11,921,207	5.91	18,489,805	3.82
Haddock	14,207,186	6.41	3,957,699	8.69	13,864,832	4.05	23,745,678	7.00	33,470,788	4.34
Halibut	140,189	6.22	86,235	8.59	109,358	5.45	389,219	7.03	524,009	5.98
Pollock	914,575	5.15	265,505	8.86	1,223,678	3.16	2,622,075	5.67	4,594,356	2.99
Cusk	378,131	4.69	141,890	7.19	494,731	3.58	665,378	5.68	1,244,545	3.70
Halibut	47,539	20.60	7,902	28.31	78,937	16.76	60,989	22.13	190,564	17.28
Mackerel	-	-	-	-	-	-	980	7.76	2,185	11.99
Flounders:										
Gray sole	567,990	5.55	246,035	8.45	528,098	5.19	978,755	6.80	1,575,574	4.86
Lesser sole	99,130	12.09	24,165	16.23	60,684	12.81	162,770	13.61	217,867	12.07
Yellowtail	369,614	4.24	130,655	7.47	101,890	3.43	1,005,154	5.05	1,070,505	2.07
Blackback	53,375	7.82	43,800	8.47	22,685	7.95	216,390	6.93	157,325	6.23
Dab	246,038	4.52	131,125	6.62	211,181	3.06	526,553	5.22	674,401	2.94
Other	450	4.89	1,000	13.60	-	-	1,450	10.90	4,860	3.00
Rosefish	11,226,800	2.92	4,658,487	3.79	9,573,310	2.69	21,303,616	3.17	21,426,045	2.62
Whiting	165	6.67	1,808	6.69	300	5.67	57,900	3.79	4,735	5.26
Wolffish	68,150	5.52	15,295	8.39	85,865	5.16	99,370	6.33	197,315	4.92
Scallops (meats)	33,520	35.92	3,917	37.99	41,410	24.46	44,128	36.27	57,386	23.23
Other	9,355	-	5,775	-	8,021	-	24,728	-	15,978	-
Total	36,876,692	4.97	11,559,115	6.63	35,427,465	3.56	63,826,540	5.45	83,918,243	3.75

* Weighted average of prices per pound paid to fishermen.

LEND-LEASE BUYS PASS BILLION DOLLARS

Purchases of farm and fishery products for Lend-Lease and other requirements have now passed the billion dollar mark, according to a recent Department of Agriculture report. The Agricultural Marketing Administration started buying under this program on March 15, 1941. Through April 22, 1942, purchases totaled \$1,010,000,000.

The announcement that purchases have exceeded a billion dollars comes just a year from the date of first delivery of food products to representatives of the United Nations. First delivery, to representatives of the British Government, was made on April 29, 1941.

Of the billion dollars in purchases, \$24,000,000 were for fish, and for vitamin concentrates, \$4,300,000. These supplies can be used for domestic distribution to public aid families and for free school lunches, to meet requirements of the Red Cross, for shipment under the terms of the Lend-Lease Act or other special programs, or for stabilization reserves.

WAR RISK INSURANCE AVAILABLE

The War Shipping Administration announced on April 27, 1942, that it was prepared to underwrite war risk insurance policies covering commercial fishermen against loss of life or injury arising from war action.

Insurance will be issued on a group basis, according to the announcement, to fishermen's associations, unions, and vessel owners associations, and will be underwritten in amounts of not less than \$1,000 or more than \$5,000 per man. At the option of the fisherman his insurance may be bound for periods from one month to four months, provided premium is paid in full in advance.

Applications for such policies should be addressed to the Director of Wartime Insurance, War Shipping Administration, Washington, D. C. Payment of premiums may be made at the Washington office or at offices in one of the following cities: Baltimore, Maryland; Boston, Massachusetts; Galveston, Texas; Los Angeles, California; Mobile, Alabama; New Orleans, Louisiana; New York City; Norfolk, Virginia; Philadelphia; Pennsylvania; San Francisco, California, and Seattle, Washington.

For the present, premiums for inshore operations will be at the rate of 75 cents per thousand dollars, and for offshore operations will be at the rate of \$1.50 per thousand dollars per month.

In connection with this insurance, the War Shipping Administration announced that arrangements had been made with the United States Employees' Compensation Commission so that the country-wide loss settling facilities of the latter Agency would be available for claimants under this insurance.

The Administration's announcement is contained in Bulletin No. 5, which can be procured upon request, and is issued in accordance with the provisions of General Order No. 6, which authorizes such announcement to be made.

SEA MOSS IN MAINE

Sea moss is to be found quite abundantly the entire length of the Maine Coast, according to a recent release from the Sea and Shore Fisheries Department (Boothbay Harbor). It grows in a strip or belt at approximate low water mark on rocks and ledges, also along the rocky coastline of outlying islands and extending peninsulas, from April to October of each year.

"The curing or drying process by which this moss is finally prepared for the ultimate market or consumer is more or less delicate. Most important in this process is not to allow fresh water in any form, not even fog or mist to touch the moss during the drying process. On the other hand, it does need to be washed or rinsed in salt water every morning for at least eight or ten mornings while being cured. The complete process requires 14 days of sunshine. Every evening and when damp or wet weather threatens the moss is packed into covered tubs or other containers and spread out again in the morning.

"The reason for not allowing fresh water to touch the moss is because it breaks down the tiny cells in which the desired content of the product is contained and therefore bleeds the moss of its goodness and destroys its value. The salt water application serves to wash out all grit, gravel, and foreign matter, and still allows the moss to retain all its value.

"Prices for bleached moss vary. Last year in Massachusetts the price jumped from 3¢ per pound to 25¢ per pound, and prices even higher than that were obtained. The price of raw moss is from 2¢ to 2½¢ per pound."

MAINE CANNED CRABMEAT

Although crabs have been harvested along the Maine coast for more than 40 years to supply an expanding market for fresh meat, canning of these crustaceans is a comparatively new industry in the Pine Tree state, according to a Department of Sea and Shore Fisheries bulletin issued on April 6. From 1929 to 1939 various packers experimented with the product in a small way and placed a few cases on the market but no major operation was attempted until a Stonington packer developed his process three years ago.

The war and a higher tariff imposed by Congress on imports gave added impetus and, at the present time, no less than six firms are either in the business or about to start. Consumer acceptance of the product has been highly favorable.

The bulk of the supply of crabs comes direct from the lobster fishermen. They are found all along the Maine coast, and are smaller than the Japanese and Russian varieties.

FISHERIES OF FLORIDA

Fish dealers at Riviera and West Palm Beach, Florida, reported a catch of 82,700 pounds of muttonfish* during the 48 hours ending at 10 a.m. on April 13, 1942, according to the report of the Market News Aide for that area to the Service's Jacksonville Fishery Market News office.

In addition, 11,800 pounds of unclassified fish, consisting mostly of porkfish and grunts, and a few thousand pounds of bluefish, Spanish mackerel, and kingfish were reported. The bulk of the catch was made April 12, and no appreciable production of fish occurred immediately prior to or following this period.

Muttonfish is normally caught with hand lines; but it is estimated that 95 percent of the current catch was made with gill nets. Some were picked up by hand in the surf, and others caught with hand lines. The few thousand pounds of bluefish, Spanish mackerel, and kingfish caught during this period were taken in the usual manner. It is doubtful that these varieties were affected in the same manner as the muttonfish.

It is understood the fish were caught in a relatively small area opposite the ocean beach at Riviera, embracing about one mile of the coast and quite near the shore. It is understood, also, according to the Service representative, that many of the muttonfish appeared to be "stunned" or asphyxiated, but "came back to life" after a relatively short time. No statement has been received that any of the fish were dead when caught.

Several of the dealers reported that relatively large daily catches of muttonfish have been made during the summer months, although none apparently have been as great as the catch of April 12. One dealer is said to have reported a catch of 16,000 pounds one day last summer; but during 1941, the monthly catch of muttonfish for April and May for this locality as reported to the Florida office amounted to 700 and 5,700 pounds respectively.

According to the Weather Bureau office in Jacksonville, the weather conditions in the Riviera area would be referred to as mild during the 48-hour period of the run: winds of about 18 to 20 m.p.h. and a light cold wave were reported. No eruptions of the earth's crust were reported.

According to the Aide, the Commander of the U. S. Coast Guard reported a low barometer reading of 29.6 between April 9 and April 13, and no record of depth bombs or explosives of any kind being used.

An adequate explanation of the large catch of muttonfish on April 12th is not possible on the basis of present information, according to the Service's Jacksonville office. Whether or not explosives were used in the ocean by Navy patrol boats or planes appears to be an important question, the answer to which may be obtained at some future date.

FISHERIES OF THE NEW ENGLAND STATES IN 1940

Commercial catch of fishery products in the New England States during 1940 amounted to 626,054,100 pounds, valued at \$20,493,733, according to Current Fishery Statistics No. 25. This is a decrease of 6 percent in volume but an increase of 5 percent in value as compared with the catch in 1939.

With respect to the value of the catch, haddock ranked first, cod second, lobsters third, clams fourth, and rosefish fifth. The catch in Maine amounted to 88,088,000 pounds, valued at \$2,606,416; New Hampshire, 788,000 pounds, valued at \$105,204; Massachusetts, 510,938,000 pounds, valued at \$15,755,757; Rhode Island, 12,060,000 pounds, valued at \$966,152; and Connecticut, 14,180,000 pounds, valued at \$1,060,204.

*The average annual catch of muttonfish in Florida for four years (1936-39, inclusive) amounted to 203,400 pounds; and for Palm Beach County, 35,300 pounds.

The New England fisheries provided employment for 18,546 fishermen, 12,650 persons engaged in wholesale and manufacturing establishments, and 186 persons employed on transporting craft.

The value of the manufactured fishery products of the 398 wholesale establishments amounted to \$23,324,155 compared with \$26,032,888, in 1939. Salaries and wages paid to employees of these wholesale establishments during 1940 amounted to \$7,547,395.

FISHERIES OF THE MIDDLE ATLANTIC STATES IN 1940

Catch of fish and shellfish in the Middle Atlantic States during 1940 amounted to 355,553,000 pounds, valued at \$7,650,957 to the fishermen, according to the Service's Current Fishery Statistics No. 24. As compared with the catch in 1939 this represents an increase of 27 percent in volume and 4 percent in value. An increase of about 100,000,000 pounds in the catch of menhaden, a very low-priced species of fish utilized exclusively for reduction purposes, is primarily responsible for the increase in value being incommensurate with the large increase in quantity.

Based on the value of the catch, oysters were the most important item of production, with clams and menhaden following in importance.

The fisheries of New York yielded 91,959,000 pounds of fish and shellfish, valued at \$4,216,224; New Jersey, 160,554,000 pounds, valued at \$2,956,946; Pennsylvania, 23,000 pounds, valued at \$2,373; and Delaware, 103,017,000 pounds, valued at \$475,414.

During 1940, direct employment in the fisheries was furnished to 7,737 fishermen, 5,880 persons in wholesale and manufacturing establishments, and 215 persons to transporting craft. Salaries and wages paid to the persons employed in the 339 fishery wholesale firms in that area amounted to \$6,736,554, as compared to \$6,835,641 paid to employees of 378 firms in 1939.

The value of manufactured fishery products produced by these firms in 1940 amounted to \$15,815,684.

FISHERIES OF SOUTH ATLANTIC AND GULF STATES IN 1940

In 1940, according to Current Fishery Statistics No. 23, there were 575,533,000 pounds of fishery products, valued at \$14,644,895 taken commercially in the South Atlantic and Gulf States. This is a decrease of 8 percent in quantity but an increase of 5 percent in value as compared with the catch during the previous year.

Shellfish were by far the most important product landed with respect to value. In 1940, the shellfish production was valued at \$8,842,000 to the fishermen, while the fish products amounted to \$5,803,000 in value to the fishermen. The catch of shrimp, amounting to 150,541,000 pounds, valued at \$5,893,000, ranked foremost in importance with respect to value, with oysters, mullet and menhaden following in that order.

There were, in 1940, 27,941 fishermen engaged in the commercial fisheries of this area. In addition, there were 677 persons employed on transporting craft, and 18,926 persons employed in fishery wholesale and manufacturing establishments. There were 776 of these firms in 1940 as compared to 773 in 1939. The value of the products manufactured by the fishery wholesale firms in 1940 amounted to \$13,838,590, as compared to \$13,996,722 in 1939.

FISHERIES OF PACIFIC COAST STATES IN 1940

Commercial catch of fishery products in the Pacific Coast States during 1940 amounted to 1,453,281,000 pounds, valued at \$29,255,930, according to data released by this Service in Current Fishery Statistics No. 26. This is a decrease of 15 percent in quantity but an increase of 7 percent in value as compared to the catch in 1939.

With respect to the value of the catch, tuna ranked first, pilchards second, and salmon third; with respect to volume, landings of pilchards accounted for 63 percent of the total. The catch in Washington amounted to 108,632,000 pounds, valued at \$6,354,287; that in

Oregon, 54,203,000 pounds, valued at \$2,741,767; and in California, 1,290,446,000 pounds, valued at \$20,159,876.

The Pacific Coast fisheries provided employment for 25,183 fishermen, 19,109 persons engaged in wholesale and manufacturing establishments, and 141 employed on transporting craft.

The value of the manufactured fishery products produced by 351 firms amounted to \$62,631,235, as compared with an output valued at \$60,097,926 in 1939. Salaries and wages paid to employees of these wholesale establishments during 1940 amounted to \$11,449,359.

FISHERIES OF WASHINGTON

The otter-trawl fleet, which was tied up pending price negotiations during most of the week ending April 11, resumed fishing after a price settlement was reached on April 13, according to the Service's Seattle Market News office. The first delivery of fresh halibut to Seattle was made on Friday, April 17, when a salmon troller marketed 460 pounds of halibut at 26 cents per pound. The first delivery by a halibut vessel was made on April 20 when the "Unimak" sold 9,500 pounds over the Halibut Exchange at a straight price of 28 cents per pound. A year ago, the season's first delivery by a halibut vessel to Seattle brought 19-1/8 cents for "medium" and 18 cents per pound for "chicken" halibut for a trip of 16,000 pounds. Rough weather is understood to be hampering halibut fishing operations during the current season to date.

FISHERIES OF THE UNITED STATES AND ALASKA IN 1940

Data on the catch of fishery products for the year 1940 in all sections of the United States and Alaska (except the Mississippi River and its tributaries for which data are for 1931) indicate a combined catch of 4,056,524,000 pounds, valued at \$98,635,000, according to the Service's Current Fishery Statistics No. 27. As compared with the catch in the same sections during the preceding year, this represents a decrease of 9 percent in quantity and an increase of 2 percent in value.

The Pacific Coast section was the largest contributor to this catch with a production of nearly 1,500,000,000 pounds, valued in excess of \$29,000,000.

There was a total of 124,795 fishermen employed in making the total United States and Alaska catch, while an additional 90,215 were employed in fishery wholesale and manufacturing establishments. During 1940 manufactured fishery products valued at \$167,212,798 were produced in the Pacific Coast States.

PRELIMINARY STATEMENT OF CANNED OYSTER PACK IN 1941

Total production of the pack of canned oysters in 1941 in the United States amounted to 593,195 standard cases of 48 five-ounce cans, valued at \$2,879,027, according to Current Fishery Statistics No. 22 recently released by the Fish and Wildlife Service. This represents a decrease of 8 percent in quantity but an increase of 14 percent in value as compared to the previous years total.

Regarding the output by States, Mississippi led all States with a pack of 225,563 standard cases, valued at \$1,204,489. Washington ranked second, with a production of 167,597 standard cases, valued at \$670,627.

In addition to the regular pack there were 3,785 standard cases of smoked oysters, valued at \$30,944, which were produced in Washington and Louisiana.

MANUFACTURED FISHERY PRODUCTS SHOW 2 PERCENT DECREASE IN 1940

Based on surveys for 1940 by the United States Fish and Wildlife Service in all sections of the United States and Alaska except the Mississippi River area, and for 1931 in that region, the total production of manufactured fishery products was valued at \$171,719,000 as compared with \$175,687,000 in 1939, according to Current Fishery Statistics No. 30. The production of canned fishery products in the United States and Alaska during 1940 amounted to 708,930,000 pounds, valued at \$94,182,000; the output of byproducts was valued at \$30,554,000;

the production of frozen fishery products, excluding packaged products, amounted to 99,907,000 pounds, estimated to be valued at \$7,400,000; and the yield of fresh and frozen packaged fish and shellfish amounted to 236,699,000 pounds, valued at \$32,748,000. Based on surveys for 1940 in all sections except the Mississippi River area, and for 1931 in that area, the production of cured fishery products amounted to 97,326,000 pounds, valued at \$14,234,000. It is estimated that about 690,000,000 pounds of fresh fishery products (excluding packaged fish and shellfish), valued at \$59,000,000, were marketed during 1940. The total marketed value to domestic primary handlers of all fishery products in 1940 is estimated at \$238,000,000.

A comparison of the value of manufactured fishery products in 1940 as compared with the previous year shows that the value of the pack of canned fishery products in all sections decreased 3 percent as compared with 1939. Byproducts decreased 10 percent, while the value of packaged fish and shellfish increased 6 percent and the value of the cured products increased less than 1 percent.

ANALYSIS OF 1941 NEW ENGLAND CATCH BY GEAR AND AREA

Fishing vessels landing fares at Boston and Gloucester, Massachusetts, and Portland, Maine, during 1941 numbered 386 craft of 5 net tons capacity or greater, according to Current Fishery Statistics No. 21. These vessels made 12,667 trips to the fishing grounds and were absent from port 49,893 days. The catch of edible fish landed at the three ports amounted to 473,536,097 pounds when the salted fish had been converted to the basis of fish caught or round fish as usually landed. This was an increase of 27 percent as compared with the catch made during the previous year.

Large otter trawls (those of 150 gross tons capacity or greater) accounted for 185,335,000 pounds or 39 percent of the total catch landed at the three ports. Medium otter trawl vessels (those of 51 to 150 gross tons) were second in importance, accounting for 159,793,000 pounds, or 34 percent of the landings, while small otter trawl vessels (those of 5 net tons to 50 gross tons capacity) accounted for 60,930,000 or 13 percent of the total landings.

Data on the number of trips made and days absent from port show that large otter trawls were absent from port an average of 9.3 days each trip. Vessels operating harpoons made trips averaging 18.5 days each; those operating medium otter trawls 6.6 days; those operating line trawls 3.9 days; and those operating small otter trawls 2.6 days.

The catch taken on Inner Grounds and landed at the three ports amounted to 77,263,000 pounds, or 16 percent of the total; that on Eastern Massachusetts, 59,474,000 pounds, or 13 percent; that on Central and Southwest Georges, 58,312,000 pounds, or 12 percent; and that on Western Side South Channel 40,023,000 pounds, or 8 percent.

BRITISH COLUMBIA SALMON EXPORT PERMITS TO BE ISSUED

During the 1942 season Export Permits for Pacific salmon will be issued as follows, according to a statement issued April 21 by the Chief Supervisor of Fisheries, Vancouver, B. C.

1. Export Permits will be issued for Red Spring salmon no matter how caught, in a fresh, frozen, or mild-cured state, until further notice.
2. Permits will be issued for White Spring salmon no matter how caught, in a fresh state only, until June 30th only.
3. Permits will be issued for White Spring salmon, mild-cured, to the extent of the amount exported during the year 1941 by each operator.
4. Permits will be issued for kippered salmon to the extent of the amount exported during the year 1941 by each operator.

No permits for the export of fresh salmon, other than Red and White Springs, as stated above, will be issued.

No permits will be issued for any species of frozen salmon other than Red Springs. This means that all varieties of salmon, other than Red Springs, may be frozen for the domestic market only.

CHICAGO WHOLESALE RECEIPTS SHOW INCREASE IN MARCH

The total receipts of fishery products on the Chicago Wholesale Market amounted to 6,119,000 pounds during the month of March. This represents an increase of 12 percent as compared with the previous month and a decline of 2 percent when compared with a year ago, according to the Service's Chicago Fishery Market News office. Lake trout, smelt, rosefish fillets and shrimp were largely responsible for the monthly increase. Smelt, with an increase of 100 percent, was the single item showing the greatest gain. This is accounted for by the continuance of the seasonal smelt run in the Upper Wisconsin and Michigan area.

Receipts of Fishery Products at Chicago

Item	March 1942	Mar. 1942 compared with		3 months Jan.-Mar. 1942	3 mo. 1942 com- pared with 3 mo. 1941
Classification:	Pounds	Percent	Percent	Pounds	Percent
Fresh-water fish	3,763,000	+ 27	+ 9	9,699,000	- 8
Salt-water fish	1,619,000	- 16	- 29	5,468,000	+ 12
Shellfish	737,000	+ 24	+ 47	2,210,000	+ 2
Total receipts	6,119,000	+ 12	- 2	17,377,000	- 1
Leading items:*					
Lake trout	577,000	+ 60	+ 30	1,203,000	+ 4
Smelt	574,000	+100	+ 41	954,000	+ 23
Whitefish	292,000	- 16	+ 30	948,000	- 21
Halibut	825,000	- 17	- 4	2,522,000	+ 17
Rosefish fillets	321,000	+ 55	+ 1	839,000	+ 13
Shrimp	420,000	+ 40	+226	1,177,000	+ 2
Leading sources:					
Massachusetts	595,000	+ 1	- 12	1,899,000	+ 20
Michigan	675,000	+ 54	+ 83	1,345,000	+ 29
Wisconsin	1,010,000	+ 62	+ 12	2,059,000	+ 1
British Columbia	779,000	- 23	- 27	2,376,000	+ 9
Manitoba	993,000	- 4	- 24	3,547,000	- 20
Domestic total	4,017,000	+ 28	+ 13	10,370,000	+ 6
Imported total	2,102,000	- 10	- 22	3,007,000	- 61
Transported by:					
Truck	2,373,000	+ 33	+ 3	5,987,000	- 1
Express	1,007,000	+ 46	+ 13	2,420,000	- 1
Freight	2,739,000	- 9	- 10	8,970,000	- 2

* Includes fresh and frozen fish.

FROZEN FISH TRADE

Stocks of Frozen Fishery Products Decline 22 percent in Month Ending April 15

Holdings of frozen fishery products in domestic cold-storage plants on April 15, which totaled 48,579,000 pounds, were 22 percent below those of the previous month. However, these holdings were 36 percent above those of April 15, 1941, and 34 percent above those of the 5-year average for this date, according to data furnished by the Agricultural Marketing Service of the Department of Agriculture. Holdings of practically all important marine and fresh-water items showed declines as compared with the previous month, although increases were indicated in the holdings of such items as cod and haddock fillets, and sablefish. Stocks of cured herring also advanced during the month. Practically all items showed increases in holdings as compared with the same date a year ago, with shrimp, rosefish and haddock fillets, lake herring, and mild-cured salmon showing the most substantial gains.

Holdings of Fishery Products in the United States

Item	April 15 1942	April 15 compared with			Mar. 15 1942	Apr. 15 1941	5-yr. av. April 15
		Mar. 15 1942	Apr. 15 1941	5-yr. av. April 15			
	Pounds	Percent	Percent	Percent	Pounds	Pounds	Pounds
Frozen fish and shellfish:							
Total holdings	48,579,000	- 22	+ 36	+ 34	62,160,000	35,757,000	36,137,000
Important items:							
Cod fillets	1,345,000	+ 11	+ 12	+ 14	1,215,000	1,201,000	1,181,000
Haddock fillets	4,095,000	+ 21	+ 80	+ 45	3,384,000	2,279,000	2,832,000
Pollock fillets	1,133,000	- 29	- 41	- 41	1,594,000	1,926,000	1,906,000
Rosefish fillets	2,625,000	- 16	+116	+122	3,138,000	1,215,000	1,184,000
Halibut	2,452,000	- 53	+ 1	+ 43	5,217,000	2,430,000	1,717,000
Mackerel	775,000	- 61	- 12	- 25	1,986,000	877,000	1,035,000
Sablefish	1,755,000	+ 38	+ 45	+ 90	1,272,000	1,208,000	925,000
Salmon	4,023,000	- 25	+ 18	+ 37	5,357,000	3,415,000	2,935,000
Smelt	1,456,000	- 33	- 17	+ 31	2,170,000	1,746,000	1,113,000
Whiting	1,915,000	- 32	+ 59	- 41	2,831,000	1,208,000	3,252,000
Blue pike & sauger	1,178,000	- 14	+ 39	+ 40	1,378,000	851,000	844,000
Lake herring	1,412,000	- 18	+ 74	+ 84	1,731,000	814,000	769,000
Whitefish	1,430,000	- 2	- 1	- 3	1,465,000	1,440,000	1,479,000
Shrimp	5,064,000	- 26	+242	*	6,859,000	1,479,000	*
Cured fish:							
Herring, cured	12,370,000	+ 7	- 25	- 24	11,534,000	16,464,000	16,199,000
Salmon, mild-cured	3,958,000	- 14	+ 69	+ 13	4,590,000	2,339,000	3,505,000

* Data not available.

Haddock and Rosefish Fillets Account For Nearly Half of Month's Freezings

Freezings of fish and shellfish during the month ending April 15, 1942, showed an increase of 38 percent over the volume frozen the previous month, and 13 percent over freezings for the month ending April 15, 1941. Haddock and rosefish fillets were the most important items frozen during the month, their combined production constituting 47 percent of the total.

Freezings of Fishery Products in United States Cold-storage Plants
(Figures are for the month ending on the date indicated)

Item	April 15 1942	April 15 compared with			March 15 1942	April 15 1941	5-yr. av. April 15
		March 15 1942	April 15 1941	5-yr. av. April 15			
	Pounds	Percent	Percent	Percent	Pounds	Pounds	Pounds
Total fish and shellfish	9,665,892	+ 38	+ 13	+ 28	7,017,455	8,567,516	7,546,000
Important items:							
Cod fillets	350,056	+ 21	+ 3	- 17	288,443	361,600	422,000
Haddock fillets	2,628,779	+246	+ 54	+ 48	759,167	1,707,562	1,773,000
Rosefish fillets	1,959,641	+ 7	- 26	+105	2,103,244	2,635,059	954,000
Flounders	184,916	+376	+172	+311	38,878	67,869	45,000
Sablefish	312,086	+ 6	+4478	+976	294,131	6,817	29,000
Smelt	149,512	- 57	- 27	- 9	347,197	203,605	165,000
Whiting	205,674	+114	+ 68	+ 77	96,138	122,541	116,000
Pike	182,898	+ 7	- 7	+289	170,641	196,089	47,000
Shrimp	601,423	+ 31	+ 58	*	460,167	379,453	*

* Data not available.

Boston Cold-storage Holdings Up 8 percent in April

On April 29 cold-storage inventories of fishery products in Boston were 8 percent over the comparable date in March and 12 percent above April a year ago, according to the Service's Boston Fishery Market News Office. Increases in volume were due largely to heavy "in" movements of cod and haddock fillets.

Holdings of whiting, except round fish and that held for animal food, amounted to 178,000 pounds on April 18 in 15 warehouses in Maine and Massachusetts. This total was about 42,000 pounds under the previous week and 248,000 pounds less than on March 21.

Boston Cold-storage Holdings

Item	Apr. 29, 1942	Apr. 29 compared with		Mar. 25, 1942	Apr. 30, 1941
		Mar. 25, 1942	Apr. 30, 1941		
	Pounds	Percent	Percent	Pounds	Pounds
Total fish and shellfish	7,010,000	+ 8	+ 12	6,516,000	6,267,000
Leading items:					
Fillets:					
Cod	715,000	+ 93	+ 6	370,000	672,000
Haddock	2,912,000	+180	+ 69	1,041,000	1,727,000
Pollock	572,000	- 4	- 42	595,000	992,000
Rosefish	484,000	- 8	+193	527,000	165,000
Smelt	824,000	- 29	- 6	1,167,000	878,000
Shrimp	331,000	- 28	+126	458,000	27,000

New York's Cold-storage Holdings 36 percent Above 1941

At the end of April, cold-storage holdings of fishery products in New York warehouses amounted to 6,026,000 pounds, 15 percent less than a month previous but 36 percent above a year ago, according to the Service's Market News office in New York. The increase from the totals of 1941 is due mainly to increased holdings in butterfish, spiny lobster tails, and shrimp.

New York Cold-storage Holdings

Item	Apr. 30, 1942	Apr. 30 compared with		Mar. 26, 1942	May 1, 1941
		Mar. 26, 1942	May 1, 1941		
	Pounds	Percent	Percent	Pounds	Pounds
Total fish and shellfish	6,026,000	- 15	+ 36	7,125,000	4,443,000
Leading items:					
Butterfish	385,000	- 12	+ 82	435,000	211,000
Salmon, king (chinook)	371,000	- 24	- 9	486,000	408,000
Whitefish	666,000	+ 2	- 2	656,000	682,000
Lobster tails, spiny	446,000	+ 29	+148	347,000	180,000
Shrimp	480,000	- 43	+385	846,000	99,000

Chicago Cold-storage Holdings Continue to Decline

Chicago's cold-storage warehouses held 5,430,000 pounds of fishery products on April 30, 1942, according to the Service's local Market News office. This was a decline of 17 percent as compared with the previous month, but an increase of 31 percent as compared with the same date last year. Items showing marked declines for the month were blue pike, sauger, lake herring, whitefish, halibut, and shrimp.

Chicago Cold-storage Holdings

Item	Apr. 30, 1942	Apr. 30 compared with		Mar. 26, 1942	Apr. 24, 1941
		Mar. 26, 1942	Apr. 24, 1941		
	Pounds	Percent	Percent	Pounds	Pounds
Total fish and shellfish	5,430,000	- 17	+ 31	6,571,000	4,138,000
Leading items:					
Blue pike and sauger	626,000	- 14	+ 5	727,000	596,000
Lake herring	422,000	- 12	+ 44	481,000	293,000
Whitefish	432,000	- 11	+ 29	483,000	336,000
Halibut	550,000	- 46	+ 30	1,027,000	423,000
Shrimp	548,000	- 34	+381	824,000	114,000

Canadian Cold-storage Holdings Down 10 percent in April

On May 1, Canadian cold-storage holdings of frozen fresh fish were down to 14,373,000 pounds, according to preliminary data released by the Dominion Bureau of Statistics. Items showing most marked decreases as compared to holdings on the same date the previous month were mackerel, salmon, whitefish, and sea herring. Whole cod and cod fillets were the only items whose holdings increased. Holdings of frozen smoked fish were slightly above those of the previous month, but were 57 percent below those of a year ago. Stocks of smoked groundfish fillets were up 115 percent as compared to April 1, 1942, while finnan haddie and sea herring kippers showed declines of 27 percent and 44 percent respectively.

Canadian Cold-storage Holdings

Item	May 1, 1942	May 1 compared with		Apr. 1, 1942	May 1, 1941
		Apr. 1, 1942	May 1, 1941		
	Pounds	Percent	Percent	Pounds	Pounds
Frozen fresh fish					
Total holdings	14,373,000	- 10	- 19	16,016,000	17,677,000
Important items:					
Cod:					
Whole	433,000	+ 10	+ 57	394,000	275,000
Fillets	2,005,000	+191	- 42	689,000	3,453,000
Salmon	1,648,000	- 31	- 17	2,397,000	1,986,000
Sea herring	4,838,000	- 18	+ 19	5,870,000	4,049,000
Halibut	734,000	- 3	- 66	760,000	2,188,000
Mackerel	89,000	- 46	- 60	164,000	225,000
Whitefish	455,000	- 23	- 34	593,000	715,000
Tullibee	734,000	- 14	-	850,000	732,000
Frozen smoked fish					
Total holdings	926,000	+ 19	- 57	779,000	2,156,000
Important items:					
Finnan haddie	128,000	- 27	- 69	176,000	415,000
Fillets: Cod, haddock, etc.	577,000	+115	- 59	268,000	1,393,000
Sea herring kippers	148,000	- 44	- 39	266,000	243,000

Freezings of Fishery Products in Canadian Plants Up 19 percent in April

Freezings of fresh fishery products in Canada during April were 19 percent above totals for the previous month but were 30 percent below those for April 1941, according to preliminary data collected by the Dominion Bureau of Statistics. Heavy freezings of cod fillets accounted largely for the increase over March. Freezings of halibut and cod fillets were considerably below those of these items during April 1941. The decrease in halibut freezing resulted from the fact that the Pacific Coast fishery for this species opened on April 15 this year, whereas in 1941 fishing was begun on April 1st. An increase of 93 percent in the freezings of smoked groundfish was responsible for the increase of 33 percent in freezings of all smoked fish.

Freezings of Fishery Products in Canadian Cold-storage Plants

Item	April 1942	April compared with		March 1942	April 1941
		Mar. 1942	Apr. 1941		
	Pounds	Percent	Percent	Pounds	Pounds
Frozen fresh fish					
Total freezings	2,988,000	+ 19	- 30	2,513,000	4,260,000
Important items:					
Cod:					
Whole	156,000	+ 3	+114	151,000	73,000
Fillets	2,095,000	+ 103	+ 12	1,032,000	1,872,000
Haddock fillets	145,000	- 59	- 56	358,000	329,000
Salmon	26,000	- 26	+136	35,000	11,000
Sea herring	111,000	- 84	- 49	686,000	217,000
Halibut	207,000	+1194	- 84	16,000	1,261,000
Frozen smoked fish					
Total freezings	1,084,000	+ 33	- 36	818,000	1,683,000
Important items:					
Finnan haddie	35,000	- 84	- 88	223,000	295,000
Fillets: Cod, haddock, etc.	1,024,000	+ 93	- 25	530,000	1,373,000
Sea herring kippers	18,000	- 68	+ 50	56,000	12,000

CANNED FISH TRADE

Unsold Canned Salmon Stocks in Cannery Hands Decline

Unsold stocks of canned salmon in cannery hands were away down again at the end of April--21,000 below those even of the preceding month, according to the report of the Association of Pacific Fisheries. As compared with a 10-year average of about 1,800,000 million cases usually unsold at this time, packers now hold only a little over 37,000.

Canned Salmon Unsold--Standard Cases

Item	April 30, 1942	March 31, 1942	April 30, 1941
Chinook or king	8,739	12,594	41,810
Puget Sound Sockeye	8,775	10,900	20,212
Alaska red	857	2,041	46,517
Coho, silver, and medium red	1,231*	1,462*	31,070
Pink	11,591	16,607	68,886
Chum	3,365	10,752	20,196
Blueback	1,615	2,273	405
Steelhead	893	1,294	2,593
Total	37,066	57,923	232,689

*Does not include coho tails.

Canned Salmon Quotations

As of May 1, canned salmon was virtually off the market, with but one quotation offered--Puget Sound sockeyes at \$2.85 per dozen $\frac{1}{2}$ -pound flats--according to the Service's Seattle Market News office.

Shrimp Pack Shows Monthly Increase

Considerable gains were noted in the month's shrimp pack by canneries in the Gulf and South Atlantic States under the Seafood Inspection Service of the United States Food and Drug Administration, according to the Service's New Orleans office. The total number of cases packed amounted to 28,202. In spite of the large monthly increase, the total pack for the season was 132,473 cases or 15 percent below the corresponding period of a year ago.

Wet and Dry Pack Shrimp in all Sizes in Tin and Glass--Standard Cases

M O N T H			S E A S O N		
1942	1942	1941	1941-1942	1940-1941	5-yr. average
Apr. 1-Apr. 25	Mar. 1-Mar. 28	Apr. 1-Apr. 26	July 1-Apr. 25	July 1-Apr. 26	July 1-May 1
28,202	2,150	263	777,025	909,498	990,198

Due to the small pack, the majority of the packers were not quoting prices on May 1. Quotations reported to the Service's office for canned shrimp in the usual wholesale quantities in plain No. 1, standard tins, f.o.b., point of production, follows.

Canned Shrimp Prices--Per Dozen Tins

Item	May 1, 1942	April 1, 1942	May 1, 1941
WET PACK			
Small	\$2.10-2.25	\$1.90-2.20	\$1.20-1.30
Medium	2.25-2.40	2.00-2.30	1.25-1.40
Large	2.40-2.60	2.10-2.40	1.35-1.45
Jumbo or Extra Large	2.50-2.75	2.20-2.60	1.40-1.55
DRY PACK			
Small	\$2.20-2.25	\$1.90-2.15	\$1.20-1.30
Medium	2.30-2.40	2.00-2.25	1.25-1.40
Large	2.40-2.60	2.10-2.35	1.35-1.45
Jumbo or Extra Large	2.50-2.75	2.20-2.50	1.40-1.55

California Pack of Canned Tuna Continues Below Normal

California canners packed but 46,660 standard cases of tuna during March, a decrease of 58 percent from the 111,519 cases packed in the corresponding month of last year. Information released by the California Bureau of Marine Fisheries shows that the pack of this item during the first three months of 1942 was about one-third the total canned during the same months of 1941.

The canning of mackerel also continued to lag behind that of last year, however the March 1942, pack slightly exceeded that of March 1941. The total pack of this species for the three months ending with March 1942 represented a decrease of 41 percent as compared to the same period during 1941.

California Pack of Tuna and Mackerel--Standard Cases^{1/}

Item	March 1942	February 1942	March 1941	Three mos. ending with March	
	Cases	Cases	Cases	1942	1941
Tuna:					
Albacore	56	-	3,049	368	3,049
Bonito	1,031	1,503	115	4,342	7,581
Bluefin	-	-	-	-	-
Striped	6,888	1,269	28,994	13,863	62,421
Yellowfin	35,381	6,193	69,366	92,246	219,238
Yellowtail	1,496	958	2,332	2,454	4,430
Flakes	1,808	224	7,350	8,914	38,920
Tonno style	-	-	-	-	4,074
Total	46,660	10,147	111,206	122,187	339,713
Mackerel	28,665	16,780	20,266	105,755	177,926

^{1/} Standard cases of tuna represent cases of 48 7-ounce cans, while those of mackerel represent cases of 48 1-pound cans.

FOREIGN FISHERY TRADE

The St. Andrews (New Brunswick) station has explored and found worthwhile quantities of carageen in several new areas, according to Commercial Fishermen's Weekly, issue of May 11. Production and marketing of dried Irish Moss in the Martimes increased from less than 10,000 pounds in earlier years to about 200,000 pounds--an amount which will probably be greatly exceeded in 1942. It was sold at prices between 13 and 20 cents per pound.

The importance of good livestock and poultry feeds in securing the highest possible production from Canada's wartime flocks and herds and the desirability of using certain fish tissues high in Vitamins D and G in farm feeds resulted in an order by the Wartime Prices and Trade Board this week setting maximum wholesale prices for selected high vitamin fishmeal products.

The ceiling price has been fixed at \$120 per ton, carlot basis, for fish tissues guaranteed to contain not less than 25 micrograms of Vitamin G per gram. When Vitamin G in that quantity is present and also not less than 20 A.O.A.C. units of Vitamin D, the price per ton may be increased by the lowest wholesale value at the point where such fish tissues are manufactured of an equal unitage of Vitamin D from an available synthetic Vitamin D product.

Vitamin G (Riboflavin) produces a growth factor essential in livestock and poultry feeds. Formerly this vitamin was supplied through the use of relatively large quantities of dried milk powder, which is no longer available for feeding purposes in quantities to meet the demand. The fish product will supply Vitamin G in slightly higher quantities than the average skim milk powder and at a lower cost.

When packed in second hand bags, the price per ton must be reduced in proportion to the difference in price of new and second hand bags. The usual price differentials due to transportation and delivery costs will apply, and the normal relationship will continue between maximum retail prices and where the materials are sold in commercial mixed feeds.

An undertaking to fish, freeze and ship fish and trout from Great Slave Lake to North American market centers was recently sanctioned by the Dominion government which has approved plans of a company to build a quick-freezing plant, valued at \$200,000, at Hay River, North-western Territories.

Equipment and supplies will be taken in from Edmonton next June. Monthly production is estimated at 500,000 pounds which will be shipped by trucks to a point on the Northern Alberta Railways.

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Canada's entire 1942 pack of canned salmon and canned herring will be sent overseas to help meet the food needs of Britain, according to the Fisheries News Bulletin (Ottawa, Canada).

However, says the Bulletin, "the reserving of canned salmon and sea herring stocks for Britain need not disturb Canadian housewives a great deal. True, they may not be able to secure what they formerly looked upon as a regular standby in household diet, but there is a bright side to the picture, too. The domestic shortage of canned salmon and canned sea herring will be the means of bringing to many a Canadian table canned seafoods not formerly tried, and the introduction of many Canadians to varieties of fish foods they will agree have been too long overlooked."

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British Columbia fishermen found March an "off" month generally in fishing operations. Chiefly responsible for the drop in the total production for the western province were herring, pilchard, and salmon landings, all of which showed declines. Prices received were, on the whole, higher than those prevailing in March 1941, but the drop in catch was sufficient to offset the gain on the value side. The decline in herring landings was chief contributor to reductions, and was mainly accounted for by the failure of British Columbia herring fishermen to locate the schools during the last week or so of the legal fishing season when landings normally are heavy.

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The fish-liver importations through California and New Mexico border ports continue at an ever-increasing rate, according to Los Angeles Station of the Federal Food and Drug Administration. During March, the station inspectors examined 207 importations of livers of various species. Most of these were small shark and sea-bass, but a few entries of scupin shark were made. Some of these contained as high as 150,000 units of vitamin A per gram of oil. The quality of these livers has greatly improved as a result of the inauguration of rigid inspection of all importations. Only about 6 percent of the lots contained any decomposed cans.

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THE OVERFISHING PROBLEM

By E. S. Russell, O. B. E., D. Sc., F. L. S.
Director of Fishery Investigations
Ministry of Agriculture and Fisheries, Great Britain
Cambridge, 1942, 130 pp.

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".....Whereas of late years the breed and fry of sea fish has been greatly prejudiced and destroyed by the using of nets of too small size or mesh, and by other illegal and unwarrantable practices: Be it enacted....., that from and after the twenty-fifth day of September one thousand and seven hundred and sixteen, if any person or persons shall use at sea.....any trawl-net, drag-net, or set-net whatsoever, for the catching of any kind of fish (except herrings, etc.) which hath any mesh or moke of less size than three inches and a half....., such person or persons so offending shall forfeit all and singular such net or nets so used.....and also for every such offence the sum of twenty pounds of lawful money..... or be imprisoned.....during the space of twelve months."

By the same act minimum size limits were imposed on the sale of a considerable list of different kinds of fish under penalty of forfeiture of such undersized fish and a fine of twenty shillings.

This Act of the British Parliament passed in the reign of George I, was repealed on the advice of a Royal Commission in 1868 only to be re-enacted in 1933 in virtually its original form. The problem of overfishing troubled the British fisheries for two centuries; it faces the American fisheries today.

Seldom does one find so clear and understandable, so forthright and unpretentious, and so readable and entertaining a condensation of more than a half a century of scientific research as is found in Dr. Russell's little book embodying the De Lamar lectures delivered before the School of Hygiene of the Johns Hopkins University in March 1939; nor could one conceive of a subject of greater importance to the fisheries of the United States than "the overfishing problem" which is the subject of these lectures.

Although the specific illustrations and the supporting scientific data were drawn chiefly from the fisheries of Great Britain, in the North Sea, and from the Arctic Coast of Norway, and Iceland, to the Atlantic shelf of Africa, the general principles which control anywhere in the world the development, the rise to maximum production, and the ultimate decline of sea fisheries under intensive exploitation, are clearly defined in such a way that the American reader will find frequent application to familiar conditions in home waters. Each of the lectures--(1) the exploitation of the fish stocks, (2) the depletion of the older grounds, (3) age analysis of fish populations, mortality rates and rate of growth, (4) the overfishing problem in its modern formulation, and (5) the regulation of the sea fisheries--is complete in itself and affords a leisurely hour's reading. Such a reading, however, will provoke many hours of thoughtful reflection, and such reflection should lead to profitable action on the part of American fishermen.

In his conclusion, Dr. Russell says: "We have seen in the course of these lectures that the state of overfishing exists in many of the trawl fisheries in Northwestern European waters. Two things are wrong. First, there is too much fishing, resulting in catches below the possible steady maximum, and second, the incidence of fishing falls too early in the fishes' life, resulting in a great destruction of undersized fish which ought to be left in the sea to grow. Mesh regulations, if sufficiently drastic, will cure the second evil so far as round fish are concerned, and they may well be reinforced by suitable size limits. For the first evil, there is only one radical cure, namely a reduction of the amount of fishing."

This is a familiar theme to fishery biologists in the United States who have reached identical conclusions from extensive data gathered over a period of years by the old Bureau of Fisheries and the present Fish and Wildlife Service. It is on the basis of such research that Herrington has recommended increased mesh sizes and minimum size limits for the New England trawl fisheries, and minimum size limits for lobsters; restrictions on the intensity of fishing have been recommended by Dahlgren for the Alaska herring and by Nesbit for the Atlantic shad and other shore species. The latter recommendation is based on a fundamental principle which Dr. Russell fully develops: ".....that up to a point you can increase yield by increasing fishing, but after this maximum is reached the more you fish the less weight of fish you catch." From a series of simple theoretical calculations and from a great number of practical illustrations taken from many years' records of the British fisheries, he draws the general conclusion "that there must be for every fish an optimum rate of fishing. When the rate exceeds the optimum the yield will fall in spite of the increased effort expended."

Dr. Russell cites a well known example of the benefits of a reduced fishing rate in the Northern Pacific halibut fishery in which legal control of the rate of fishing has been applied under the treaties made between the United States and Canada in 1924 and 1930, renewed in 1937. He recalls to us the fact that the formerly depleted halibut fishery was restored under regulation. On the southern banks the abundance of halibut increased by as much as 60 percent. So great was the general increase in the stock that the fishermen are able to catch their limit in five months instead of in nine and the Commission now estimates that the earnings of halibut fishermen are \$1,000,000 a year greater than they would have been without regulation.

To an American fishery biologist the book is most refreshing not because the facts are new--they have all been published in the technical literature--nor because the conclusions and the plan of action for restoring the fisheries of Northwestern Europe are unique but because they parallel so closely the conditions revealed by fishery research in American waters and because the correctives for overfishing in Europe are the same as those that must be applied here. Indeed, Dr. Russell's conclusions have universal application and, although the method of applying them will vary for different species and in different localities, it is for this reason that the book merits thoughtful reading by American fishery administrators, operators and fishermen.

Elmer Higgins, Chief,
Division of Fishery Biology.

"ARE YOU OVERLOOKING FISH AS A GOOD SOURCE OF PROFIT?"

An article of this title published in the Locker Operator, April 1942, calls the attention of managers of frozen food locker plants to opportunities for profit and further service to customers through the handling of fishery products in their establishments. Information is offered on a variety of subjects of interest to locker men who are considering the addition of fish to the items handled. The discussion covers alternate methods of starting out in the fish business; advantages of buying fresh fish during periods of seasonal abundances; seasons of the year when supplies for various species are greatest; forms of fishery products available and their suitability for locker plants; and technological problems of handling fishery products in locker plants. Also included in the article are references to the availability of advice and suggestions from the staff of the Division of Fishery Industries, Fish and Wildlife Service, with names and addresses of its field staff.

THE COVER PAGE

Fishermen's Dock, at Seattle, where these men are mending a purse-seine, is one of the principal mooring and outfitting places for Pacific Northwest fishing vessels. Many of the vessels which operate in the halibut, salmon, Alaska herring, pilchard, shark and small flatfish fisheries, use this dock, which is owned and operated by the Port of Seattle. The dock has storage warehouse facilities where fishermen may rent lockers to store their gear, and plenty of open space where they can haul out and work on gear in need of repair. Machine shop and supply houses occupying quarters on or maintaining contacts at the dock provide rapid and complete servicing of the fishermen's needs.

FISHERY TRADE INDICATORS

(Expressed in Thousands of Pounds)

Item	Month	Latest month	Same month a year ago	Previous month
FRESH FISH LANDINGS				
Boston, Mass.	March	24,553	26,401	7,318
Gloucester, Mass.	do	10,447	7,335	3,583
Portland, Maine.	do	1,877	1,692	659
Boston, Gloucester, and Portland:				
Cod.	do	8,514	9,022	1,838
Haddock.	do	14,207	13,865	3,968
Pollock.	do	915	1,224	266
Rosefish.	do	11,227	9,573	4,658
FISH RECEIPTS, CHICAGO^{1/}				
Salt-water fish.	do	1,619	2,273	1,918
Fresh-water fish.	do	3,763	3,467	2,963
Shellfish, etc.	do	737	501	595
By truck.	do	2,373	2,303	1,787
By express.	do	1,007	892	688
By freight.	do	2,739	3,047	3,002
COLD STORAGE HOLDINGS^{2/}				
New York, N. Y.:				
Salt-water fish.	April	3,493	2,533	4,284
Fresh-water fish.	do	1,450	1,657	1,415
Shellfish, etc.	do	1,083	371	1,426
Boston, Mass.:				
Salt-water fish.	do	6,491	6,135	5,772
Fresh-water fish.	do	7	17	7
Shellfish, etc.	do	512	115	738
Chicago, Ill.:				
Salt-water fish.	do	1,723	1,494	2,386
Fresh-water fish.	do	2,780	2,183	2,913
Shellfish, etc.	do	729	313	1,087
Unclassified.	do	198	148	185
United States:				
Cod fillets.	do	1,345	1,201	1,215
Haddock fillets.	do	4,095	2,279	3,384
Halibut.	do	2,452	2,430	5,212
Mackerel.	do	775	877	1,976
Pollock fillets.	do	1,133	1,926	1,594
Rosefish fillets.	do	2,625	1,215	3,085
Salmon.	do	4,023	3,415	5,361
Whiting.	do	1,915	1,208	2,837
Shrimp.	do	5,064	1,479	6,859
New England, all species.	do	9,296	8,110	9,955
Middle Atlantic, all species.	do	10,934	7,477	14,860
South Atlantic, all species.	do	2,008	1,710	3,076
North Central East, all species.	do	12,163	8,514	15,369
North Central West, all species.	do	2,700	2,033	3,639
South Central, all species.	do	3,084	1,295	4,405
Pacific, all species.	do	8,393	6,429	10,701

^{1/} Includes all arrivals as reported by express and rail terminals, and truck receipts as reported by wholesale dealers including smokers.

^{2/} Data for individual cities are as of the last Thursday of the month, except those for Boston which are for the last Wednesday of the month, and those for geographical areas and the total of the United States which are as of the 15th of the month.

Note:--Data for the latest month are subject to revision.

CYPRINUS CARPIO, THE CARP:
COMMERCIALLY, AND AS A FOOD FISH

Carp ranks as one of the most valuable species of fish taken in the commercial fisheries of the inland waters of the United States. In the latest year for which figures are available, the catch of 19,770,000 pounds for the entire United States was worth \$686,000 to the carp fishermen. In 1922, carp fishermen of the country received an all-time high amount of \$872,000 for their catch of 18,339,000 pounds.

Although the carp is widely distributed and probably occurs in every State in the Union, the most important commercial fisheries are located on the Mississippi River and its tributaries, and on the Great Lakes--principally in Lakes Michigan (Green Bay), Huron (principally Saginaw Bay), and Erie (in Sandusky Bay and west of Sandusky). In addition to their commercial importance, carp are of recreational interest in many sections of the country. In some areas these fish are planted in quarry holes, and other waters not suitable for other fish, where they furnish both sport fishing and food for the people in the vicinity. Just as turkeys are fattened to be in prime condition for holiday buying, so are live carp--held in special "ponds" or "cribs"--fed corn and potatoes for months while awaiting express shipment to New York and other eastern markets for the Christmas trade. Corn fattens the carp; improves the flavor of the meat; and, in addition, hardens the flesh, thus improving its condition for shipping.

To meet the demand for live fish, millions of pounds of carp are brought annually into the New York market. These fish literally "swim" to market, for they are transported in specially constructed, aerated tank cars, by express. When the express cars reach the New York terminal they are met by tank-trucks. The fish are shifted by dip nets into large metal cans so that the weight of the fish can be recorded before they are transferred to the tank-trucks. These trucks, which are aerated and iced, carry the fish to the local wholesaler or retailer where they are stored in "live" tanks pending sale.

Through experiments carried on in the Fish and Wildlife Service technological laboratory in Washington by the late W. T. Conn, Technologist, it was found that a special preliminary treatment imparted to the cooked fish an excellent flavor.

The treatment consists of covering the dressed fish or fillet with a mixture made in the following proportions:

1 C. salt	1 ts. black pepper
1 C. onion finely crushed	1/8 tsp. mace
2 tbsp. vinegar	

Chop and crush the onion by passing through the finest plate of a food chopper, saving all the juice. Mix the ingredients thoroughly. Place the fish in a deep plate and cover all surfaces with the mixture and allow it to stand for one hour. The fish is then thoroughly rinsed and the mixture discarded. The fish then should be washed in a pan of cold water for about one minute to remove any last traces of salt on its surface.

After this preliminary treatment, the carp is ready for preparation to be fried, broiled or baked--without additional seasoning. However, if it is to be boiled, allow 1 1/2 tbsp. of salt to each quart of water.

Method for Smoking Carp

The larger fish are used, weighing usually 12 to 15 pounds. With a sharp knife, the skin and scales are cut off in broad strips (about three to a side), the cuts not going so deep, however, but that the imprints of the scales still show on the flesh. The head, viscera and fins are all cut away, and the fish is then cut up into transverse sections, some two or three inches in thickness. These steaks are placed in brine of 90° salinity to cover them and allowed to remain here from 10 to 16 hours, according to the strength of the pickle and the flavor desired. They are then strung on long iron rods, dipped in fresh water to remove surplus or undissolved salt, etc., drained and suspended in the smokehouse 4 to 8 feet above the floor, and subjected to a gentle smoke for 4 or 5 hours. The door or damper is then closed, the fires spread or built up and the fish cooked for one or two hours, according to the amount of fire, the height of the fish, and the particular cure desired. The cooling is accomplished by opening the doors of the smokehouse or by removing the fish to the outside. (From Spec. Mem. 941-A, Fish and Wildlife Ser.)

H. F. Taylor mentions in The Carp: A Valuable Food Resource (Bureau of Fisheries Economic Circular No. 31), that carp is an acceptable article of food and has been served in public eating houses.

Scientific investigation has shown that the carp is of high food value, is acceptable and palatable when carefully prepared, is easily handled and shipped, and is one of the most prolific fishes found in America. This fish is a commercial asset of considerable proportion and should be utilized to its fullest extent.

In addition to the publications suggested above, readers who are interested in the carp may write to the Fish and Wildlife Service, Washington, D. C., for F. I. 745-A, "Economics of the Carp Industry," by Edna W. Sater.

